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ONTRACTORS and ENGINEERS

GAZINE OF MODERN CONSTRUCTION MARCH 1961

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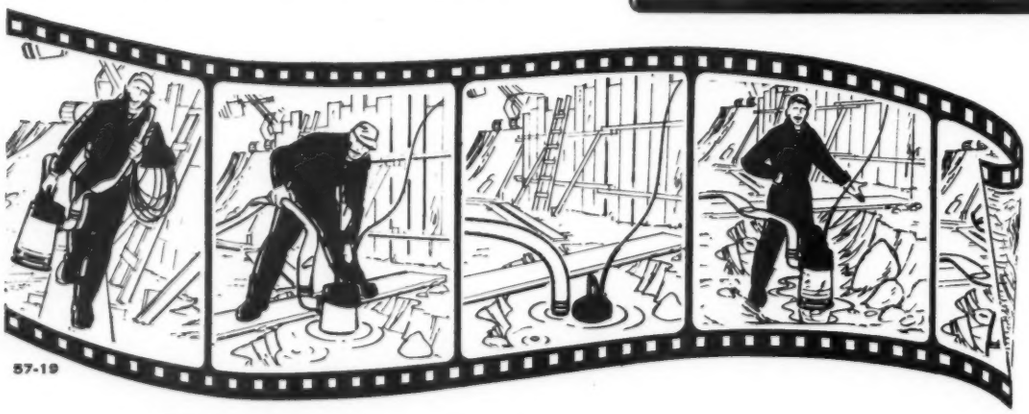

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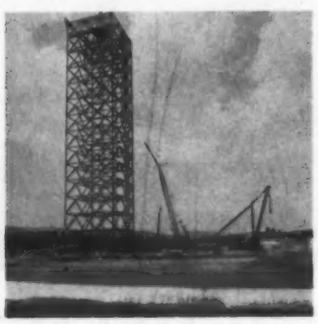

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COVER:

Men dump a Gar-Bro 1½-yard bucket to the top deck of a box-girder bridge being built with a new forming method. By using this method, the contractor, J. A. Tobin Construction Co., Kansas City, Kans., was able to reduce his bid price on superstructure concrete and to cut 30 to 50 per cent off the days ordinarily needed for forming and concrete work on this type of bridge. *Page 16*

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Distributors see better year ahead

Construction-equipment distributors—after a disappointing sales year in 1960—are looking to 1961 with some optimism. This is the prevailing attitude expressed by the majority of 370 distributors responding to a CONTRACTORS AND ENGINEERS poll of their business expectations for 1961.

The results of the poll show that, while distributors foresee no boom, they do expect to make some volume gains over last year's levels, and for some types of equipment rather substantial gains.

According to the distributors handling them, crawler tractors, wheel tractors, tractor-shovel loaders, and power shovels are the lines likely to make the most headway in 1961.

Over 38 per cent think crawler-tractor business volume will pick up by more than 10 per cent this year, and 15 per cent say the improvement will exceed 20 per cent. Altogether, 60 per cent expect a change for the better, while 25 per cent see no change ahead.

The pattern of expectations is similar for wheel-tractors. Again, over a third expect business to improve by more than 10 per cent, and half expect some improvement.

Two-fifths of distributors handling tractor-shovel loaders rate this line's 1961 prospects more than 10 per cent better than in 1960, with 15 per cent expecting volume to be more than 20 per cent better.

Expectations for motor scrapers and graders are similarly on the optimistic side. Though 17 per cent expect scraper business to decline, 49 per cent think it will gain. About one-third expect no change. Expectations for motor-grader sales are about the same.

Concerning ladder and wheel-type trencher sales, only 37 per cent expect improvement in 1961; 45 per cent anticipate no change; and 18 per cent think trencher sales will take a turn for the worse.

Power shovels and cranes will sell better in 1961, in the collective opinion of 53 per cent of 236 distributors handling this equipment. Thirty-two per cent think business will remain as it was in 1960, and 15 per cent expect a drop.

Distributors expressed a decidedly more bearish attitude about 1961 propects for concrete-paving-equipment sales than they did for most earthmoving equipment. Only 35 per cent expect better business in this line in 1961. Of the remaining 65 per cent, about 49 per cent think business will stay the same, while 16 per cent anticipate a decline.

The 1961 propects for bituminous equipment are considered about as good as for the earthmoving lines. More than half the distributors of bituminous paver-finishers expect an improvement in business this year, and about 43 per cent predict bituminous-distributor sales will rise this year.

ES OF 370 EQUIPMENT DISTRIBUTORS TO QUESTION:
"HOW DO YOU EXPECT YOUR 1961 BUSINESS VOLUME TO COMPARE WITH 1960?"

	Number of distributors reporting	Up more than 20%	Up 10-20%	Up less than 10%	Same as 1960	Down less than 10%	Down 10-20%	Down more than 20%
LER TRACTORS	236=100%	15%	23%	22%	25%	6%	5%	4%
TRACTORS	186=100%	14%	22%	16%	34%	5%	4%	5%
SHOVEL LOADERS	264=100%	15%	25%	23%	27%	5%	4%	1%
SCRAPERS	230=100%	8%	19%	22%	34%	6%	8%	3%
GRADERS	219=100%	7%	18%	22%	36%	9%	5%	3%
CHERS, LADDER and WHEEL	132=100%	5%	16%	16%	45%	8%	6%	4%
SHOVELS and CRANES	283=100%	10%	22%	21%	32%	5%	6%	4%
RETE PAVING EQUIPMENT	160=100%	5%	13%	17%	49%	9%	5%	2%
MINOUS PAVERS—FINISHERS	151=100%	2%	25%	27%	34%	7%	2%	3%
MINOUS DISTRIBUTORS	140=100%	6%	17%	20%	47%	6%	1%	3%

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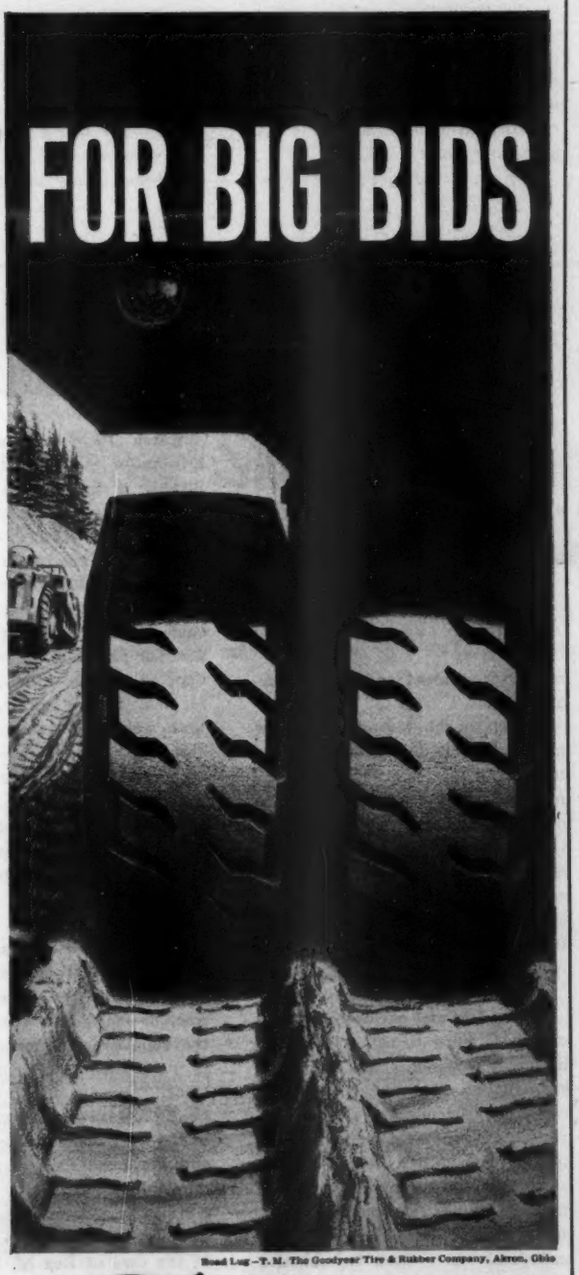

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Editorial

Let's bid wisely

One of our January articles, "How I Made Money in 1960," based on staff interviews with both large and small contractors throughout the country, stimulated some letter writing on the part of our readers. The head of one midwestern general contracting firm, a highly capable outfit in business for over 65 years, wrote that for the first time in 40 years his company has not a single contract under way. It has estimated 70 jobs in a row without getting one.

Here is a contractor who has not sustained an actual cash loss on any contract for several years, but who is understandably concerned with the steady diminution of his working capital. In order to get work, and to insure reasonable prospects that the work will be profitable, a contractor must have shrewd, experienced, aggressive estimators. The staff he needs to maintain is a sizable item in his cost of getting new business, and is all part of his overhead. Even when not actually working on a bid, estimators are developing cost data based on completed contracts, for current unit-cost information is vital to making realistic estimates.

Overhead eats into the contractor's reserves, and he must build up a contract backlog in order to operate profitably. His equipment as well as his men—both office and key field staff—must be kept working to meet that overhead. This situation, in varying degrees, is typical of most construction firms operating in an industry where competition is fiercer than ever, bidding is rougher, and profits are shrinking. Creeping inflation since World War II is still another financial handicap with which the contractor must cope.

Older, well established contractors are in as much trouble as the younger, newer firms trying to get a toe hold in the industry. In this era of low profits, both types find it difficult to pay their overhead costs. That much can be seen from a contractor's operating statement, even though such statements are often misleading to the contractors themselves.

This confusion is especially true if the contractor has any considerable volume of work under way, causing his financial situation to vary rapidly. For unless he has adequate reserves of his own, the contractor is borrowing money to buy equipment and materials and to meet payrolls while he is geting his jobs started. Expenditures will exceed receipts because of a percentage of monthly payments being retained by the owner until the job is completed. On a big job this means that a good-sized chunk of a contractor's capital is tied up for a long time.

To enable bankers and bonding companies to get a clear picture from a contractor's operating statement, it has been suggested that the contractor be made to run out of work every five years or so. Then he could collect all the money due him from which, in turn, he could pay his bills and see where he actually stands financially. Unfortunately, this solution is not feasible since the contractor's overhead would still be piling up while he was running out of work and preparing to start up again.

Since the number of contractors entering the construction industry cannot be regulated, except by the laws of economic survival, the present-day group of contractors must realize that to stay in business they must operate at a profit. They must resolve to keep their bids above cost

Surveying Washington..

By E. E. Halmos, Jr.

Hailed like new money by a lot of states—and the daily press—was that $724 million in highway-fund allotments made available by President Kennedy early last month. Fact is, the sum was already available, would have been paid out anyway about April 1, and had already been apportioned to the states for planning.

Early release of the funds had been expected by highway officials for several weeks before the announcement—it represents an easy way to get money into circulation faster, without actually increasing expenditures. Nevertheless, when overenthusiastic announcements of plans began to be reported in the general press, The American Association of State Highway Officials felt it necessary to wire all state highway departments to be cautious.

The Kennedy "emergency" program is interesting as it relates to construction. In addition to highways, it calls for speedups in going federal construction projects, for a longer-range review of the projects that could be put to contract quickly, and the reduction of interest rates on FHA housing mortgages. As expected, it also calls for Congressional action on urban renewal and school construction.

So far, though, it calls for no new money—just faster rates of spending. Later in the session, however, more money will be asked for, including the Eisenhower recommendation for keeping the present federal gasoline-tax rate and adding a half-cent to it. However, Congressional action probably won't be fast enough for the President—so look for directives.

Contractors and engineers will find that it is going to cost more to do business. Administration and Congressional proposals by early February added up to something approaching $5 billion of extra spending, over previously budgeted items. At the same time, two dozen or more proposals calling for reduction in personal income taxes were in the Congressional mills. Such a reduction would be smart politically.

More spending and less personal-income revenues leave only business to pay the difference. Taxes on employers have already been raised to pay for longer-lasting unemployment benefits. Other moves seem inevitable—like tightening scrutiny of business tax returns, restricting depreciation allowances, canceling contracts to "save" government money.

Watch Republican strategy—it'll help make things pretty confusing. Strategy is not to oppose Administration measures specifically, but to submit full-dress counter proposals for every Democratic bill of importance. For example, Democratic Sen. McNamara's school-aid bill (which includes teacher's salaries) provides a flat $30 per child; Republican Sen. Cooper's bill raises the ante but calls for distribution according to need. Both would involve spending up to $3.4 billion over a period of years. Democrat Douglas' $350 million urban-renewal bill is countered by Republican Dirksen's similar one. When these get to debate, you'll have to watch closely to see who's debating over what.

Most "second-echelon" appointments—the real contract-awarding, policy-making jobs of concern to contractors—have now been filled and the appointees confirmed with little or no trouble. James K. Carr, as Under-Secretary of the Interior will be the highest-ranking civil engineer in the government; John Moore, an educator, heads General Services Administration.

In most instances, senators had nothing but praise for appointees, and in the case of Rex M. Whitton for Federal Highway Administrator they didn't even ask questions. Only on Carr and Reclamation Commissioner Floyd Dominy were there any really sharp questions; in Dominy's case to try to support contentions that he is anti-power; in Carr's that he is pro-public power. Both denied bias.

Major controversies already center on the Bureau of Public Roads' "210" report on highway cost allocations. It takes its name from the section of the 1956 law that prescribed such an accounting. Actually, the report was very carefully worded to steer a middle course and, in the words of one

observer, can be used, like the Bible, to prove almost anything. But truckmen were immediately unhappy about a guarded conclusion that trucks aren't paying their share; waterways operators were unhappy with the repeated contention that high navigational clearances for highway bridges constitute a subsidy to the waterways. Defense isn't too happy, either, even though the report—after commenting that Defense requirements add a couple billion to costs—offsets this cost against future benefits to highway users.

The water-resources report is much better received. It calls for billions of added spending on construction of irrigation, flood-control, and other water-conservation works. This is the report of the Senate's Select Committee on National Water Resources, which went out of business January 31, after nearly two years of evidence taking and a mammoth compilation

rather than lower them just to get a job on which they know they will lose money. Let whatever edge in bidding they can contrive come from their seasoned experience in the construction industry—from their ingenuity, imagination, and applied efficiency in using the most modern methods and machines that are available to do the job.

• • •

Are construction men going soft? During a recent spell of bad weather in New York City, a women's fashion show was being held in a plush hotel on Manhattan's east side where several apartment and office buildings are under construction. The audience at the show included some 300 women and seven men. An inquiring reporter polled the men to find out who they were. Of the seven, five were from the construction industry—a general contractor, three superintendents, and an engineer. It used to be that when a job was shut down because of weather, you could generally find the boss hoisting a couple in a nearby saloon. Now it looks as if he prefers ogling fashion models in a nearby salon.

Now! Skil Roto-Hammers drill 3½" holes in reinforced concrete

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There are plenty of good reasons why the Skil Roto-Hammer is sure to be the world's largest selling hammer again in 1961! But one of the foremost is Skil's new core bits.

These hollow core, percussion type carbide bits increase the range of the Model 726 Roto-Hammer from 1⅛" up to 1½" and the Model 736 from 2" up to a full 3½"!

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Skil Roto-Hammers combine power rotation with powerful hammering to drill holes in masonry (¼" to 3½") 5 to 6 times faster than ordinary electric hammers! Lowest maintenance—no springs to break.

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of data on water uses and resources.

Key to the report, incidentally, is not the total of works it says ought to be built. You can read these totals anywhere from $52 billion to $200 billion (over a 20-year period), but the figures are confusing because they overlap

The real key, in the eyes of committee members and staff, is the attention focused on water needs in all phases that will certainly lead to legislation, probably this session.

The final Eisenhower budget (for $81 billion) is being deliberately played down. President Kennedy can and will revise it. But the Eisenhower budget will certainly be the model for revision, since the new Administration hasn't had time to do a complete rewrite. In fact, it is now becoming certain that Kennedy will make revisions piecemeal, rather than in one wrap-up message. New Budget Director David E. Bell has set up a timetable for new department heads to review programs and changes, for the President's consideration.

Basic Eisenhower recommendations apparently will stand: 37 new starts for the Corps of Engineers, 6 for the Bureau of Reclamation, the added half-cent gasoline tax mentioned above, $221 million for TVA, $66 million for VA—a total of about $6.3 billion for civil construction for fiscal year 1962.

Difference between the budgets will come in two areas: military construction, and added programs for airports, pollution control, urban renewal, and housing in general. The Eisenhower budget, for instance, included no new funds for Atlas and Titan missiles, a boost for Minuteman (solid-fuel) missiles, a cutdown in airport construction. But Kennedy has already moved to increase the military's air-lift capacity, which could mean more airfield work; and there are strong moves for programs calling for as much as $40 billion (over a 10-year period) for housing and the like.

Sen. Monroney (D., Okla.) has already introduced a measure calling for $100 million a year for civil airports (as against about $40 million proposed by the outgoing administration). Moves to jump the pollution-control grants to at least $100 million a year are certain.

School-construction aid could be boosted by the 1960 report of the Department of Health, Education and Welfare, which shows a shortage of 142,100 public elementary and secondary school classrooms as of the fall of 1960—a gain of 6,900 rooms needed since the fall of 1959. The figures, said HEW, include 66,100 additional classrooms needed, and 76,000 to replace unsatisfactory facilities.

To speed highway work, the Maryland State Roads Commission plans annual conferences on materials and specifications, between state engineers and construction-industry representatives. Another part of the plan: establishment of regional testing laboratories—instead of the central one now used in Baltimore—to facilitate rapid testing for contractors.

Bills worth watching are: HR 723, HR 2225, and HR 1135. The first two are the perennial "bid shopping" bills in another guise that'll be more palatable for contractors: they call for a single general contractor, who must name subs and sub-prices. The third prohibits employment, for two years, of former government people—military or civilian—who have handled purchasing claims for their prospective employers.

Contractor-built screed reduces hand finishing

A contractor-built screed, which reduces hand finishing of bridge decks, also produces a smoother ride for the motorist.

Designed by the J. A. Tobin Construction Co., Kansas City, Kans., the rig has a front vibrating screed and a rear oscillating strike-off screed. Both screeds can be raised and lowered by means of a hydraulic double-acting ram.

The all-steel rig is adjustable for widths up to 26 feet. The four steel wheels of the screed ride on 3 × 3-inch box steel rails. To the rails are welded threaded rods that set into pipe supports. Nuts on the threaded rods permit adjustment of the steel rails.

In the top photo, pipe supports of one side are welded to a wide-flange beam that rests on the reinforcing steel. On the curb side of the pour, no wide-flange beam is used; the pipe supports rest on a previously placed web (girder stem) of the box-girder bridge.

Four hand winches—two on each end of the rig—pull the screed either forward or backward. While the machine is in motion, the vibration screed is raised.

Although the screed does a good job, the company is in the process of improving it. Men will attach a rotating double auger to the front of the rig to assist in the spreading of the concrete.

The machine in the photograph was at work on one of many bridges that J. A. Tobin had under construction on the Southeast Expressway in Kansas City, Mo.

Concrete blocke

Using precast-concrete blocks as anchors, and wire rope as stays, W. J. Megin, Inc., Naugatuck, Conn., contractors, saved time and materials in erecting bridge-abutment forms on an eastern interstate route.

The system is effective on high

LUBE LOGIC Five tips to

How to return stored engines to service

In a previous issue of Lube Logic we gave you an 11-point program designed to protect gasoline and diesel engines during long idle periods. Now we'd like to finish what we started by describing the routine for taking engines *out* of storage and putting them back into action.

1 Where Texaco Rustproof Compound L has been applied to exterior of engine, remove with kerosine.

2 Remove waterproof paper and tape from all openings.

3 Remove spark plugs. Clean them and check the gap settings before replacing.

4 Remove distributor cap and clean Texaco Rustproof Compound L thoroughly from lobe of breaker cams. Replace cap.

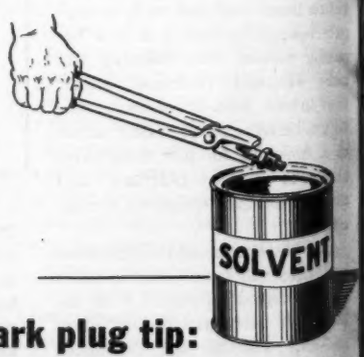
5 Check the level of the crankcase oil. If it's at the full mark, there's no need to drain the oil before operating the engine unless it requires a different grade. If the oil has fallen below the full mark during storage, drain the engine and locate the oil leak, and repair it, then refill with the proper grade of oil, before operating the engine. The first oil change after the engine is back in service should be made in half the usual period.

6 Check the cooling system for leaks, and add water or Texaco PT Anti-Freeze if necessary. It's not necessary to drain and flush if the cooling system was filled with a rust-inhibited anti-freeze before storage.

7 Fill the fuel system, start the engine, and let it run for a while. Check the oil pressure, and check for overheating and oil and fuel leaks.

End-of-shift is the best fueling time

They say there's a time and a place for everything, and for refueling equipment the best time is at the end of each day's work. And here are two reasons why. End-of-shift minimizes the possibility of fuel-tank rusting, because there's no room for condensate to form in a tank that's full of gasoline or diesel fuel. And tank-bottom sediment, stirred up by pumping in fuel, has a chance to settle down overnight, so it won't be drawn into the fuel line.



Spark plug tip: Degrease before you blast

Don't depend on your spark plug cleaner to do everything. As a matter of fact, you can actually make things worse by blasting an oil-fouled plug. Heavy oil deposits on the plug will pick up the abrasive and hold it in the recesses between the shell and the insulator. Result: burning and ultimate failure because these deposits can seriously affect the spark plug's ability to dissipate heat at high engine speeds.

Moral: degrease oil plugs in a suitable solvent and dry them *before* you blast.

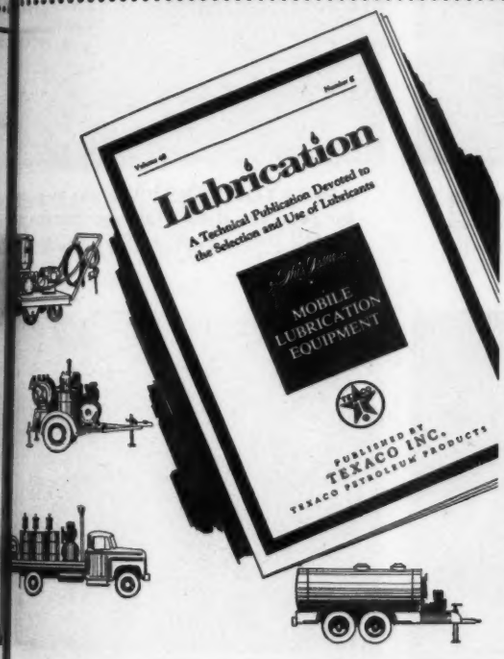
eplace bracing on bridge job

overpasses, where unfinished roadway fill makes the use of timber bracing uneconomical. The anchors also help stabilize the forms during high winds.

The blocks, 3 feet square with a ¾-inch rebar lifting ring on one side, were made with waste concrete from footing pours.

After the forms were hung by truck crane, a length of used ⅜-inch wire-rope stay tied anchor and form together. A turnbuckle, in the stay length, was adjusted to take up cable slack.

prolong equipment service life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A Technical Publication Devoted to the Selection and Use of Lubricants
MOBILE LUBRICATION EQUIPMENT
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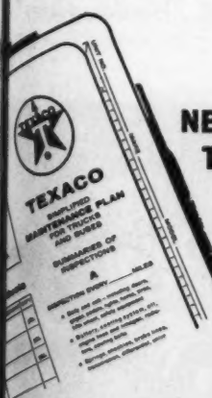

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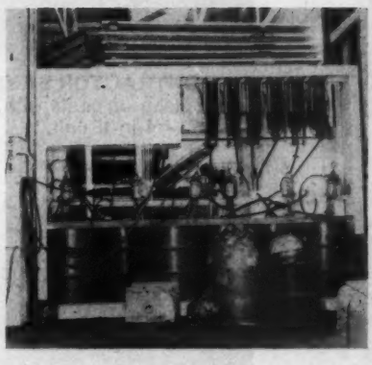
Shop lube setup moves as a unit



Just attach the sides—they are stacked on top—put a dolly under one end, hook the other end to the hitch of a truck, and this field-shop lubrication kit is ready to be moved to a new location.

At the new job site, simply put the unit back down on the floor, remove the sides, plug in the power, and you are ready to start lubricating the equipment.

This unique portable lube kit was developed and built by Roy L. Houck Sons Corp., Salem, Ore., for use in all of its field maintenance shops. The kit includes an electric-powered air compressor, five Alemite grease pumps, six hose reels mounted in the upper part of the cabinet, and a compartment for wiping cloths and other supplies. The drums of lubricants stand in the bottom of the cabinet.

The basic framework of the unit is of welded-steel sections with sheet-steel top, bottom, and ends. The removable sides are of wood construction. The entire cabinet is painted white, and Houck's crews take pride in keeping the kits clean.

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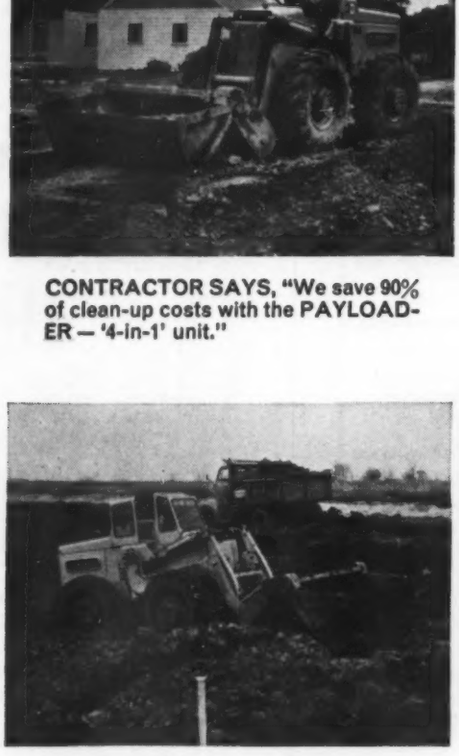
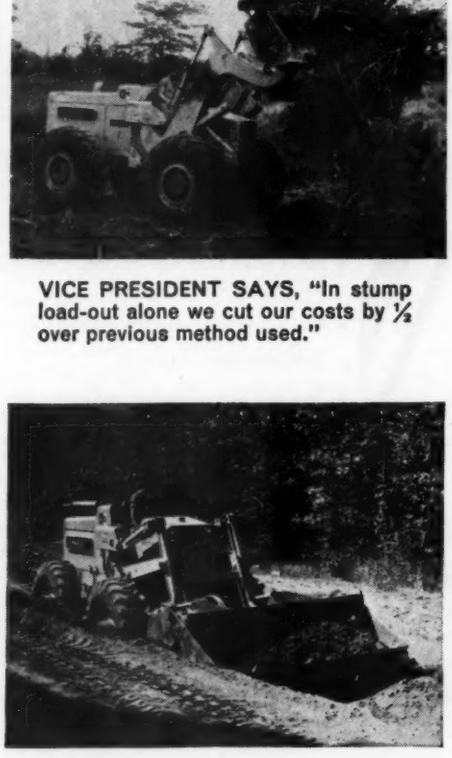
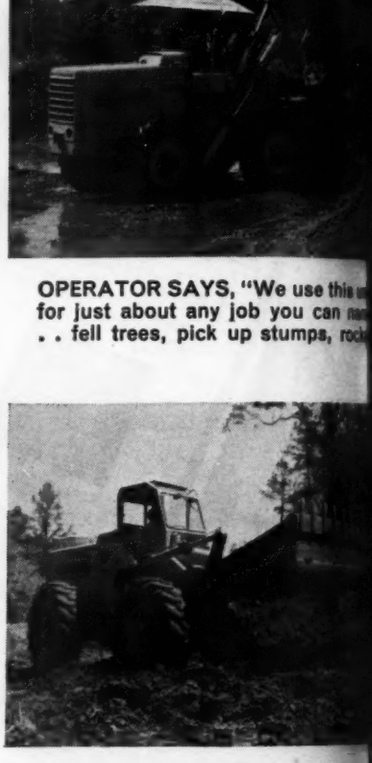


OWNER SAYS, "Four-in-one bucket cleans out better in sticky clay and in freezing weather."



SUPT. SAYS, "Versatility means less equipment — its accuracy cuts down hand labor."



FOREMAN SAYS, "It's just like a po able clamshell. Handles dozens different jobs."

FOREMAN SAYS, "Most useful single machine I have ever had in 15 years experience."

GEN. SUPT. SAYS, "This combination is very efficient. Especially good for close work . . . dumps cleaner."

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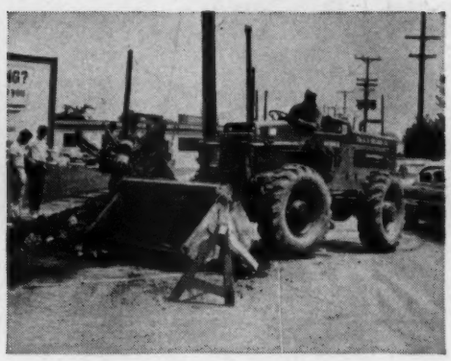
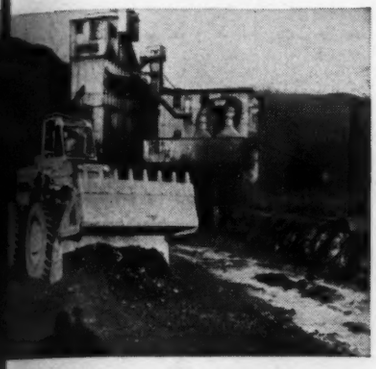
PERATOR SAYS, "It is like a magic
nd, as it can do so many things.
fficials say it is worth a million."

SUPT. SAYS, "I figure this unit was making $100 an hour pulling out all the trees we had on this job."



SUPT. SAYS, "We use it continuously to save time and money. Versatility unlimited."



UPT. SAYS, "On the job continuous-
as it can do the job applications of
veral pieces of equipment."

FOREMAN SAYS, "Versatility of '4-in-1' tops all loaders. Its uses are almost without limit."

FOREMAN SAYS, "Most of all we like the safety features. There are no moving arms in operator's way."

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ckhoe combination we can tackle
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For more facts, use Request Card at page 18 and circle No. 257

Two crews place BASE an

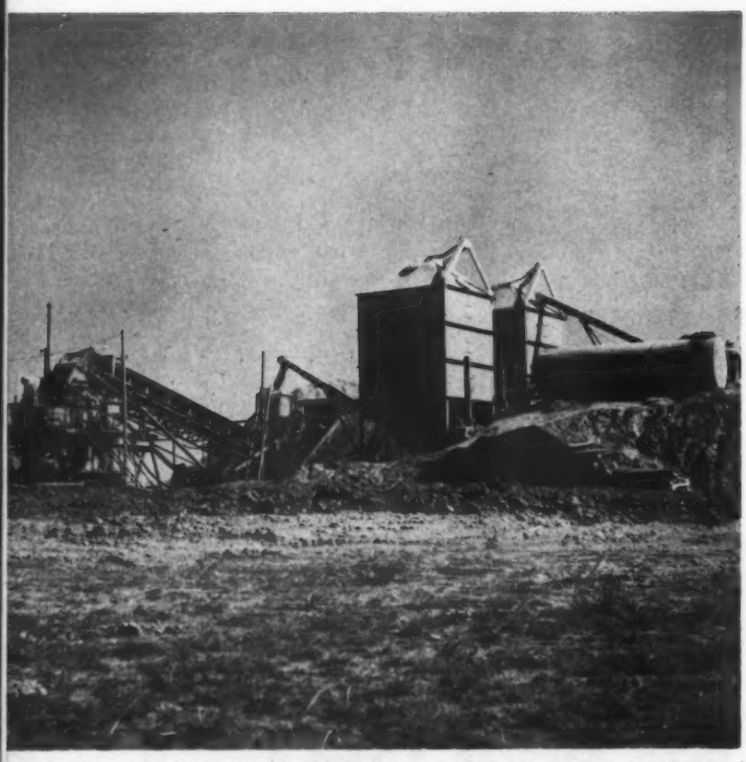
by RALPH MONSON, field editor

Separate plants at site produce cement-treated

Working from separate plants set up in the same gravel pit, two crews of the Big Horn Construction Co., Sheridan, Wyo., placed 13 miles of base and surfacing on Interstate I-90 north of Sheridan under a $1 million contract with the Wyoming State Highway Department. The grading had been done under previous contracts.

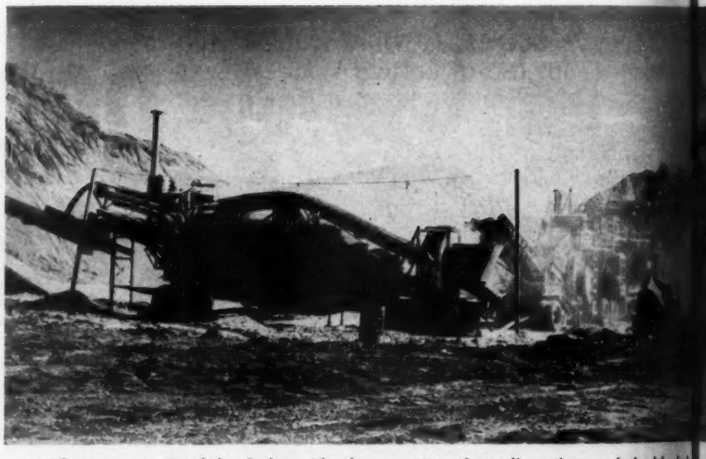
Lifts of 6 to 17 inches of 2-inch-maximum crushed-gravel subbase were placed over the graded section. A uniform 6-inch lift of plant-mixed cement-treated base followed. The finished base was shot with cutback asphalt fortified with Nostrip additive to aid in curing and to serve as a tack coat for the asphaltic surfacing.

The hot-mix asphaltic-concrete surfacing was laid in two courses, a 1½-inch first course and a 1-inch finish course. The roadway was sealed



1 Cement for the CTB is augered from the square silos to a surge hopper and metered to the Pioneer feed belt that delivers a calibrated volume of aggregate to the Barber-Greene pugmill mixer. Water from the tank at the right is added in the mixer.

2 Aggregates for the base and surfacing were dozed from a shallow gravel pit by two D8's and processed through a Cedarapids multistage plant. From the feeder, right, the gravel goes to the primary jaw crusher and secondary screen and roll crusher.



3 The tertiary unit of the Cedarapids plant consists of a roll crusher and double-deck screen in closed circuit. Belts carry the finished materials from this unit to the plant stockpiles. The crushing plant is powered by three GM 110 diesel engines.

4 The mixer discharges cement-treated-base materials into a truck that dumps to a spreader.

5 The Jersey spreader, on a D8 tractor, lays down a 6-inch course. The base is shaped to grade by the Cat 12 motor grader and rolled by the Rosco 9-wheel roller, background.

6 An Essick vibratory roller, pulled by a Farmall tractor, provides additional compaction. Cutback asphalt, fortified with Nostrip, is next applied to the base.

PAVING

or interstate highway

d bituminous surfacing mixes on Wyoming job

with cutback asphalt and sand, while the shoulders received an application of high-visibility chips.

Supervising the project for the Big Horn Construction Co. were job superintendent John L. Hansen and asphalt superintendent O. F. Schaefer. On the base, John Craig was plant foreman and Dean "Lefty" Bennett was foreman of the road crew. On the hot-mix, Eldon Alexander and Mike Keeler served as foreman of the plant and laydown, respectively.

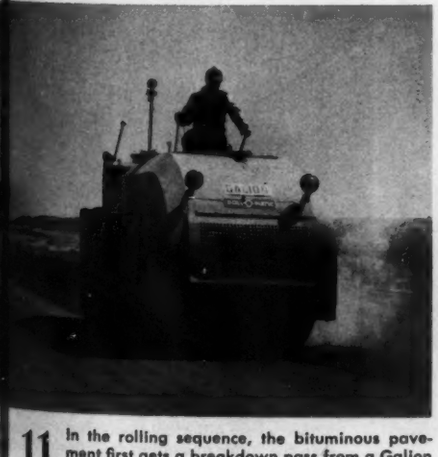
The project engineer for the Wyoming State Highway Department was I. W. Ball. On his staff were Al Wagner, Joe Kalasinsky, Bill Haegy, and Harold Ferguson. District engineer of the Sheridan District is George R. Anderson. Chief engineer of the Wyoming department is J. R. Bromley.

7 A Pioneer Continuflo asphalt plant produces the asphaltic mixes. The plant dryer burns heavy fuel oil through a Maxon burner using low-pressure air. The heater, foreground, heats asphalt storage, pipelines, and pugmill.

8 The Pioneer plant discharges hot-mix into a Ford dump truck. As it is loaded, the truck is weighed on a Fairbanks-Morse scale.

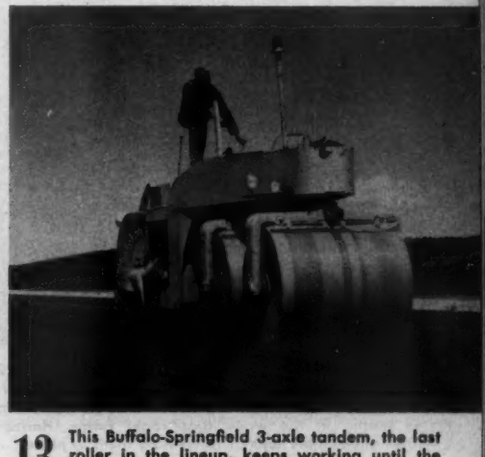
9 Ford trucks dump the hot-mix into a Pioneer paver that lays the two courses. The 57,000 tons of mixes on the job was produced and laid at an average of 155.6 tph.

10 One lane completed, the paver is loaded onto a Miller tilting-platform trailer, which a Ford truck will pull to the next lane.



11 In the rolling sequence, the bituminous pavement first gets a breakdown pass from a Galion tandem roller. This is followed by a Rosco.

12 The Rosco 9-wheel self-propelled rubber-tire roller follows the rig making the breakdown pass. Specifications required a density of 92 per cent.

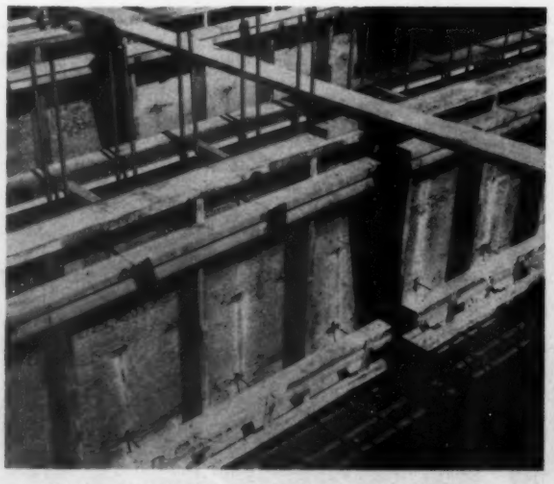


13 This Buffalo-Springfield 3-axle tandem, the last roller in the lineup, keeps working until the required density is attained. THE END

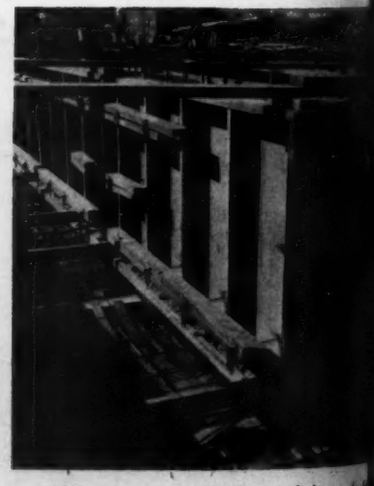
Placement of concrete is done only three times with a new forming method for box-girder bridges. Concrete is placed for the bottom deck and webs at the same time, eliminating a construction joint between them. Next, half the roadway for its entire length is completed, with the construction joint at the center line. The other half is then completed. Here a Koehring 405 crane swings Gar-Bro buckets from Smith 6-yard mixers on Mack trucks during construction of a bridge at Kansas City, Mo. This 3-span bridge carrying the Southeast Expressway over Truman Road is one of a number built with the new method by J. A. Tobin Construction Co.

(Additional photo on front cov

The bridge carrying 8th Street over the Southeast Expressway was built with the same method. With lower-deck forms set in the conventional way, and web forms in place, a carpenter is setting in the wood diaphragm forms. Horizontal 2 × 6's nailed to the tops of forms hold them in place.



Web forms are in place and ready, along with the lower deck, to receive concrete. The top row of Universal ½-inch coil ties leave inserts in the concrete that are later used to support upper-deck forms. Web forms are of ¾-inch plywood panels backed by 2 × 6 studs on 2-foot centers.



This is the open end of one of the web [illegible] constructed in panels some 8 feet long. The [illegible] haunch of the web is formed of sheet me[illegible] longer wear. Adjustable Universal screed [illegible] hold the forms above the deck steel.

New forming method for box-girder bridges

by BILL ALLEN, field editor

A new method of forming box-girder bridges greatly increases production.

The key to the forming system is in placing concrete for the bottom deck and the webs (girder stems) at the same time. Previously, a construction joint separated the bottom deck from the web. Further economies are realized by leaving the top-deck forms in place.

Developed by the J. A. Tobin Construction Co., Kansas City, Kans., the method has many advantages.

It is faster. The number of days necessary for forming and placing concrete for the superstructure is reduced by 30 to 50 per cent. The increased speed is due primarily to the reduction in the number of placements. Under the new system, concrete is placed only three times to complete the entire superstructure.

Tobin does not claim to be the first contractor to think of the method; it had been previously used in California. Tobin adapted the system to suit its own construction needs and first used it in 1959 to build box-girder bridges in Kansas. Then, last summer, with the cooperation of the Missouri State Highway Commission, Tobin made use of the method in Kansas City.

At one time last summer, the firm had twelve bridges under construction on the Kansas City, Mo., Southeast Expressway (Interstate 70). Most of these were box-girder bridges.

In the forming system, the lower-deck forms are set in place in the conventional way. On Tobin's bridges, the plywood forms rest on wood joists spanning between steel H-beam stringers. These longitudinal H-beams bear on screw-type jacks that, in turn, rest on transverse H-beams. These H-beams cap the timber piles of the falsework.

After the lower-deck steel is set in place, workmen position one wall of the web form. The web steel is tied in, and then the opposing wall is set in place.

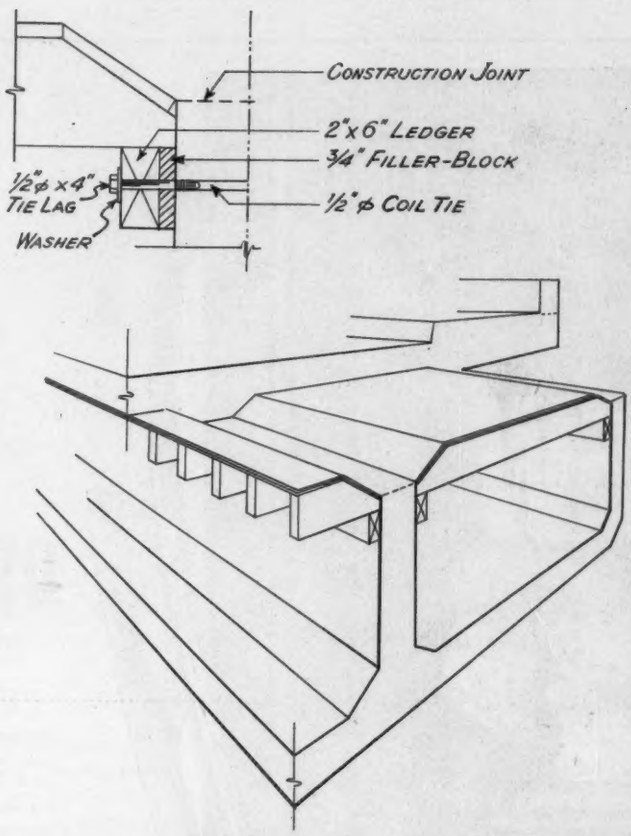
Web forms rest on chairs

The web forms are prefabricated in panels about 8 feet long. They form the lower haunch of the web but not the upper haunch. The forms rest on adjustable screed chairs.

The panels are made of ¾-inch plywood backed by 2 × 6 studs on 2-foot centers. The lower haunch is formed of sheet metal for better wear.

A single row of snap ties at 2-foot centers holds the lower part of the form together. A row of ½-inch coil ties at 2-foot centers holds the upper part of the form together. The coil ties leave inserts in the concrete that are later used in supporting the top-deck forms on ledgers. The web forms

(*Continued on next page*)



A cutaway shows details of the top-deck forming, which is left in place. Joists are on 2 × 6 ledgers bolted to the webs, and a filler block provides added bearing surface. Lag bolts screw into inserts left by coil ties.

neath the deck, workmen adjust a special ew-type jack to get forms exactly on grade. e upper H-beam supports wood joists to which ¾-inch plywood of the lower deck is nailed. e lower H-beam caps timber falsework piles.

Extensive falsework is necessary to support spans of the bridge. Temporary concrete footings support timber piles. Piles are capped with H-beams. Jacks rise from these H-beams to support longitudinal H-beams that carry the wood joists. Webs in the foreground are ready for concrete. One continuous placement takes care of lower deck and webs of the 445-foot-long span.

Concrete work goes swiftly for the top deck. These men swing the Gar-Bro 1½-yard bucket to distribute the mix, which will be struck off by the screed riding rails at the left. The screed was designed by Tobin engineers.

Men adjust the jacks to meet the grade given by the levelman. The self-leveling unit is made in Japan by Sokkisha of Tokyo. This bridge, carrying 8th Street across the Southeast Expressway, is 445 feet long and has five spans.

(Continued from preceding page)

are braced at top and bottom by horizontal timbers that run from one web to the next. Diaphragm forms also help to tie the system together.

With the web and diaphragm forms in place, concrete work starts. Beginning at one end of the bridge, concrete is bucketed to the forms for the entire length of the bridge pour. (Bridge lengths of more than 276 feet have been placed using the method.) Web concrete is placed after the lower-deck concrete has stiffened sufficiently to support the additional lifts of the web concrete.

Upper-deck forms stay in place

With the lower deck and webs completed, the forming of the upper deck starts. The joists for the deck forms rest on 2 × 6 ledgers bolted to the sides of the webs. A ¾-inch filler block between the 2 × 6 ledger and the concrete web permits additional bearing surface for the joists. The ½-inch lag bolts screw into inserts in the concrete left by the coil ties. Inexpensive ½-inch plywood covers the 2 × 6 joists on 12-inch centers. The ends of the joists are cut on a slant to fit the shape of the haunch.

All this form material is left in place. The contractor figures that the material is less expensive than the labor of removing it from the voids. No access doors need to be built in the lower deck for form removal, but access doors will be required in box girders for future maintenance.

Complete superstructure

Concrete for the upper deck is placed in two sections when the roadway is 40 feet wide or more. A construction joint along the center line of the bridge separates them. Each placement starts from one end of the bridge and continues across to the other end.

To finish the concrete, Tobin uses a rail-riding vibrating screed, designed by the company's engineers. (This screed is described in detail in this issue's "Tricks of the Trade," page 8.) After a hand float-finishing, the deck is given a broom finish and cured under wet burlap. Finally, the curb and parapet wall are formed and concrete is placed for them.

The savings in time of this forming method are due primarily to the reduction of the number of pours necessary to complete the superstructure. Under the original specifications, for example, the state required twelve pours for a 210-foot-long 3-span bridge going over Truman Road. With the new system, only three separate pours were necessary; one completed the lower deck and webs, two completed the upper deck.

According to the engineer of construction, there are no adverse effects from placing concrete for box girders with this method, and at this early stage no cracking attributable to this method has been observed. The many placement was permitted in order to combat differential shrinkage due to changes in volume and age of pours, and it is not anticipated that anything but improved quality would result from this method.

There is a moral to this story. When an alert contractor and an amenable highway department and Bureau of Public Roads get together, all can save the taxpayer money. THE END

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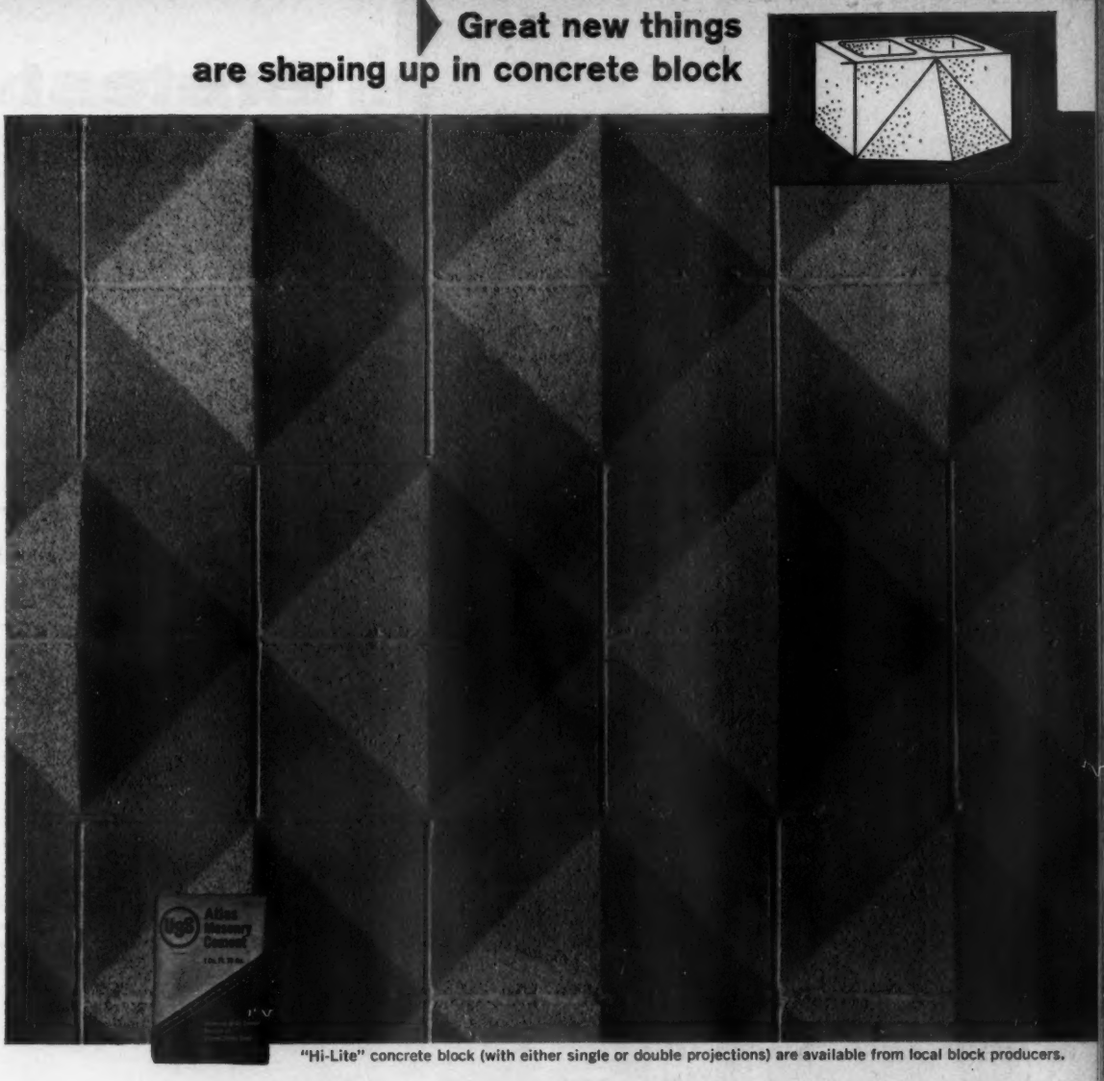
Great new things
are shaping up in concrete block



"Hi-Lite" concrete block (with either single or double projections) are available from local block producers.

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For more facts, use Request Card at page 18 and circle No. 259

Builder's association adds two staff members

■ The General Building Contractors Association, Inc., of the Philadelphia 5-county area has appointed Robert H. Thompson director of education and William E. LaForge assistant director of labor relations.

Thompson was formerly assistant executive director of the commerce and industry council of the Greater Philadelphia chamber of commerce.

LaForge previously served as director of employee relations for the Metal Manufacturers Association of Philadelphia.

Iowa Mfg. veep retires

■ Kenneth Lindsay, executive vice president of the Iowa Mfg. Co., Cedar Rapids, Iowa, has retired after 31 years with the company.

Lindsay has participated actively in the major organizations of the construction industry since their inception. He served both the American Road Builders' Association and its Manufacturers Division—the Construction Industry Manufacturers Association. He was a director of CIMA for three terms and also served as a vice president and as president. During his term as president of CIMA, he directed the preliminary organization for the 1957 Road Show. He has also worked on the joint committee on CIMA and AGC (Associated General Contractors) and has been co-chairman for several years. He was a director of the International Road Federation until his retirement. Most recently he was named a Founder-Trustee of Better Highways Information Foundation.

New highway director named for Oklahoma

■ The Oklahoma State Highway Department, Oklahoma City, Okla., has named Frank Lyons highway director.

Lyons succeeds Gen. Lee B. Washbourne, now a consulting engineer with Oklahoma City's multimillion-dollar water project for piping water more than 100 miles from eastern Oklahoma.

Euclid opens branch; names representative

■ The Euclid Division of General Motors Corp., Cleveland, Ohio, is opening a direct factory branch in Chicago to serve the northern Illinois territory. The new building will have complete parts and service facilities. Pending its completion, a temporary office has been opened in Melrose Park, Ill.

John Sharda is manager of the new branch. He will be assisted by Walter Vranesh, parts manager, and Len Johnson, service manager.

L. H. Brannian has been appointed Euclid's district sales representative in Texas. He previously served as a sales representative for the division in Fargo, N. Dak.

Prestressed group elects

■ Bob Carr and Bob Grove have been re-elected president and vice president, respectively, of the Prestressed Concrete Manufacturers Association of Texas. Carr is president of Texas Concrete Co., Victoria, while Grove directs prestressed sales for Anchor-Wate Co., Houston.

At the same time, William Ward of Houston was presented with the association's first award to an engineer for outstanding design and use of prestressed concrete in bridge construction.

Film on rock salt

■ The International Salt Co., Clarks Summit, Pa., has issued "Clear Roads Ahead," a 35-mm sound and color moving picture.

The 8-minute film, designed to aid city, county, and highway officials in planning their winter ice-control programs for maximum efficiency and economy, illustrates the use of straight Sterling auger-action rock salt to provide open roads and safe driving conditions throughout the winter. Various methods of ice control are illustrated.

Highway departments will find the film useful in establishing the value of their ice-control programs in the minds of the general public. It is also suitable for showing to civic and educational groups.

The movie may be obtained on loan through the company's sales offices or by writing to International Salt Co., Clarks Summit, Pa.

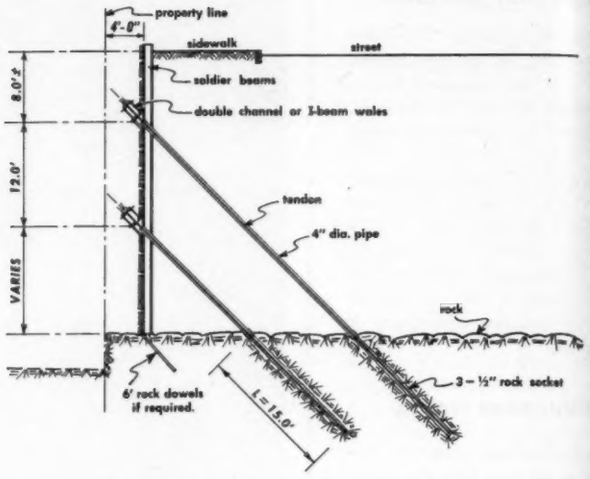
Clipper promotions

■ Harold J. Wright has been appointed vice president in charge of sales, engineering, manufacturing, and personnel for the Clipper Mfg. Co., Kansas City, Mo.

Wright was previously sales manager for the company. He will continue as liaison officer with Clipper's major suppliers and be responsible for new-product development.

Nick Coates is now sales manager.

Pretest tie-back



A typical cross section shows how sheeting is supported by "prestressed tie-backs." The 4-inch steel pipe sleeve that guides the stressed cable or rod is first driven from wale to rock with a track drill. Then the drill puts down a 3½-inch hole 10 to 16 feet into rock. Rod or cable is dropped inside the sleeve and the rock pocket is grouted. Stressing is done after a 3-day curing period.

Strands of ½-inch high-tensile steel cable are being post-tensioned by a Freyssinet jack for one of the tie-backs used to hold walls of an excavation during work on the foundation of the New York Life Insurance Co. building in New York City. A Freyssinet anchorage will lock the cable tendon at the wale. A Cyclone hoist is used to handle the 350-pound jack. This method of bracing excavations, developed by Spencer, White & Prentis, New York, N. Y., is being used on a number of the firm's jobs.

Advantages of the method are obvious when compared with conventional bracing systems. The work area (above) is clear, allowing heavy equipment such as shovels, wagon or track drills, backhoes, and end-loaders to operate easily. The access ramp is located at the most convenient spot, and blasting can be carried on without fear of damaging braces. The job of checking and re-wedging bracing is eliminated. Note shoring and tie-backs in place and the precise line drilling, left. In the background, the tie-backs aid in underpinning an adjacent building.

The photo at left shows a typical foundation job with conventional bracing.

brace excavations

Contractors and Engineers staff article

A new method of shoring to support deep excavations has been developed by Spencer, White & Prentis, Inc., foundation engineers and contractors of New York City.

Used successfully on three building projects, two in New York and one in Wisconsin, the system adapts the principles of prestressed concrete, and substitutes "prestressed tie-backs" for conventional inclined bracing.

Basically, the sheeting is tied back by anchoring steel rods or cable (called tendons) into rock and putting these members in tension. It is claimed to be most effective in retaining surrounding ground during excavation, forming, and concrete work in restricted areas. The firm has applied for a patent.

When comparing interior inclined bracing with the pretest tie-back method, workmen on the job say that tie-backs offer plenty of advantages. Work on pipe casing, which acts as a sleeve for the tie-back, can start immediately after wales are set, without waiting for the excavation to reach subgrade. The entire area is left clear for use by wagon or track drills, whose drill-boom movement would be restricted by interior braces. Blasting mats can be placed faster and more easily, and shots can be made without fear of destroying braces. Since the absence of interior braces means an increased working area, more heavy equipment can be used to speed excavation work. Shovels, backhoes, and end-loaders can be used to load trucks instead of cranes and clamshell buckets.

Previously, much thought was given to locating the access ramp, but it can now be placed at the most desirable point. Erection of formwork, panels, etc., also moves more smoothly, and the setting of reinforcing steel can be expedited. Finally, the constant checking and re-wedging required for interior bracing can be eliminated.

Typical use

The method is currently being used for the 16-story office building of the New York Life Insurance Co. on lower Madison Avenue in New York City. Turner Construction Co. holds the general contract, while Spencer, White & Prentis, Inc., is the subcontractor for the foundations. The building is of standard design and will contain nearly 850,000 square feet of floor space. It will be connected by tunnel to the insurance company's present 32-story office building and also to a nearby subway station. Plans for the structure, which covers an area of about 204 × 276 feet, show the cut for foundation excavation averaging 38 feet 6 inches; rock varies from 5 to 24 feet below original ground.

Shoring and excavation work started at about the same time, and overburden was handled by shovel and end-loader. A fleet of trucks removed the material from the job. A Vulcan No. 1 steam hammer was used to drive 10-inch 42-pound soldier beams to rock around the perimeter. Beams were on 7-foot 6-inch centers, 4 feet outside the building line. Lagging was 3 × 8-inch timber, set behind the flanges. Horizontal wales were double I-beams or channels in 12-inch 35-pound to 15-inch 40-pound sections, set on 9-foot centers. The toe of the sheeting was secured with 6-foot steel rods, doweled into rock.

When the wales were set, a section of 4-inch heavy-duty steel pipe was driven from wale to rock with the aid of a track-drill hammer. The pipe acts as a sleeve to guide the tendon through overburden, and it is withdrawn after the tendon is anchored into rock. In dense ground, or ground with boulders, the track drill pioneers the hole, drilling inside the pipe.

Additional pipe sections, handled in 15-foot lengths, can be field-welded as necessary. To date, the greatest sleeve length used on any job has been 60 feet.

When the pipe reaches rock, a track drill, working through the pipe, drills a 3½-inch hole in rock for the tendon anchorage. Depending on the ground load, it has been found that sufficient strength can be obtained from a tendon anchored 10 to 16 feet.

The tensioned members, Stressteel rods of Bethlehem alloy steel, are 1¼

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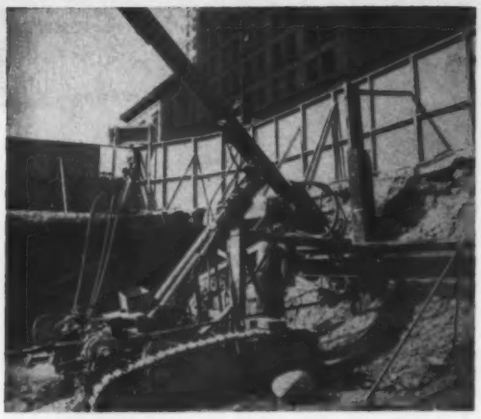

A Gardner-Denver Air Trac puts down a hole for the 4-inch pipe sleeve that serves to guide the tie-back into the rock socket. In the foreground is a drill bit with a section of steel used in the operation.

A Freyssinet center-hole jack prestresses a 1¼-inch steel rod for a tie-back. These rods are used for loads up to 108,000 pounds. For greater loads, high-tensile steel cable is used.

A Colcrete 56M mixer and Colmono No. 4 grout pump are used in the grouting operation. Minimum curing time is three days. Tests show strengths of more than 4,000 psi on 6 × 12-foot cylinders.

(Continued from preceding page)

inches in diameter, and they are used where the load will not exceed 108,000 pounds. For greater loads an additional rod can be added, but it requires a larger pipe sleeve, and this was found impractical because of driving and drilling limitations.

Instead of the extra rod, where load conditions are greater than 108,000 pounds, multiple strands of ½-inch high-tensile-strength steel cable are used. The cable, which has a design load of 20,000 pounds per strand, is manufactured by the Roebling Division of Colorado Fuel & Iron Corp.

After a tendon is pushed through a pipe sleeve into the anchorage hole, the rock socket is filled with grout. The grout is mixed 15 to 20 seconds per batch, in a Colcrete 56M roller mixer. The drum revolves at about 1,800 rpm, and this aids in keeping the mixture fluid for pumping through a Colmono No. 4 grout pump.

According to the contractor, experiments with many grout mixtures showed that best results were obtained with a neat high-early-strength portland cement, with 5 gallons of water for each 94-pound sack. No admixture was used.

Minimum curing time for the grout is three days, and tests have produced strengths in excess of 4,000 psi on 6 × 12 cylinders.

Generally, the tie-backs are post-tensioned to a load equaling the yield point of the steel. Tension is applied to the 1¼-inch rods with a center-hole hydraulic jack. Rods are secured to wales with a Stressteel wedge-anchor unit. This consists of a square wedge plate and circular anchor.

The ½-inch cable tie-backs are post-tensioned with a Freyssinet jack. The exterior of the ram is slotted to receive each cable strand, and, in turn, each strand is held by a special Supreme strand chuck. A Freyssinet anchor locks the cable tendon at the wale.

Since the jacks weigh about 350 pounds each, a Cyclone ¼-ton chain hoist is used to lift them into place. Two men handle the hoist and jacks. A third man operates the Watson-Stillman hydraulic pump, which has gages for calibrating pressure.

When gages show the required fig-

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To this high frequency vibration, the Cedarapids Paver design adds many advanced engineering features... low operating and maintenance costs, less downtime, easy push-button operation, to name a few. These are among the Cedarapids Paver benefits that have been *job-proved in the field for over four years.* No wonder this machine is so popular with profit-minded contractors all over the country.

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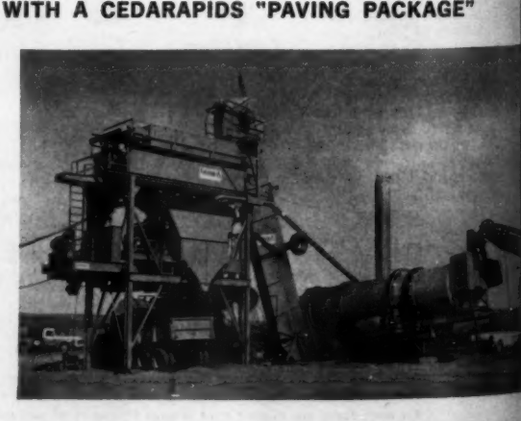

ure has been reached, pressure is maintained on the tendon for ten minutes. Each test cycle takes about an hour. Should there be a failure during post-tensioning, an additional tendon is placed near the point of failure. The firm states that out of some 300 tendons installed, fewer than half a dozen failed. These failures have been attributed to faults in the rock.

Spencer, White & Prentis, Inc., has Vince Fahey as superintendent in charge of work involving pretest tieback installations. THE END

The Interstate Highway System will provide benefits worth at least three times its cost. Drivers will save at least $2 billion yearly in operating costs and accident prevention.

A 30-INCH FRESH-WATER PIPELINE that will replace the barge used to supply water to the Island of Margarita off the coast of Venezuela is being pulled the 14½-mile distance to the mainland by a barge. The trench for the concrete line had been made ready by a submarine pipeline trenching machine and by blasting operations carried on from a barge. Pulling operations are interrupted to allow for the tie-in of each 2,400-foot pipe section. During the work, engineers keep a plot on the pipe's position and progress from the control tower. The job is being done by a joint venture of Construcciones Collins de Venezuela, C. A., the DeLong Corp., and Technica Constructora, C. A.

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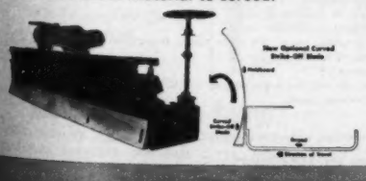

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CEMA releases film on material handling

■ "It's Your Move," a motion picture illustrating the principle of continuous flow in material handling, has been released by the Conveyor Equipment Manufacturers Association, Washington, D. C. The 24-minute movie covers a wide variety of examples, from bulk handling of coal and gravel to automated processes in manufacturing.

The film is designed to demonstrate the versatility of conveyor manufacturers in solving difficult problems of material handling; to show the benefits of mechanization; and to reveal to youth the opportunities in creative engineering.

Prints of the film may be obtained from the CEMA, 1 Thomas Circle, Washington 5, D. C. Modern Talking Picture Service, Inc., is handling distribution to television stations, vocational and senior high schools, colleges, business and industry groups, and other community organizations.

Airco appointments

■ J. W. Cunningham is the new manager of the Pittsburgh district sales office of Air Reduction Sales Co., a division of Air Reduction Co., Inc., New York, N. Y. He has been assistant manager of the company's equipment marketing department since 1959.

R. H. Merriman has been appointed district manager of Airco's Philadelphia office. Since 1958, he has been district manager of the Buffalo, N. Y., office.

Goodrich appointment

■ M. Dowell Sellers has been appointed sales development manager, plastic materials for construction, B. F. Goodrich Chemical Co., Cleveland, Ohio.

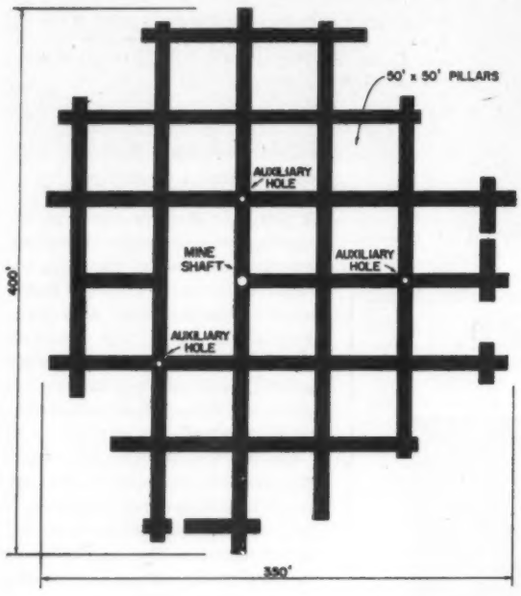
Sellers was formerly development supervisor for the firm's Darvan fiber operations at the company's Avon Lake Development Center in Ohio.

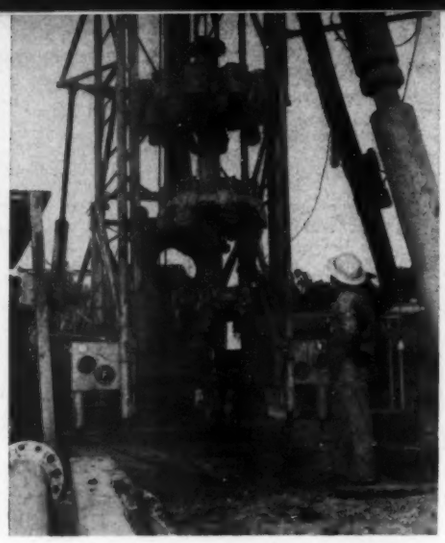
CB&I assignment

■ J. S. Van Alsburg has been assigned to the New York sales office of the International Division, Chicago Bridge & Iron Co., Chicago, Ill.

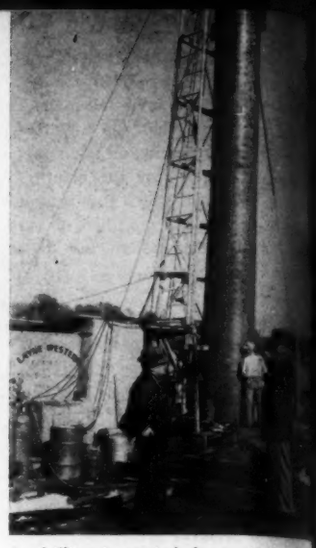
He formerly served as an engineer at the Chicago plant and erection district, and as assistant to the erection manager in La Salina, Venezuela.

Storage facilities for some 6 million gallons of propane are provided by a network of caverns, 300 feet underground, for the new plant of the Metropolitan Utilities District of Omaha. The 10-foot-wide 25-foot-high caverns are separated by 50-foot-square pillars left in place for support. The mine shaft had to be held to a minimum diameter since it is capped against the pressure of the stored gas. Auxiliary holes are for ventilation during construction and for pumps for withdrawing propane.





This drill rig with five stages of cutters is used to chew through 100 feet of overburden and 200 feet of shale to form a shaft giving crews and equipment access to the level where propane-storage tunnels are being constructed. Water pumped through the drill floats out cuttings.



As drilling is carried down, 40-foot lengths of 42-inch casing are lowered into the hole. A 50-inch-diameter casing used to get the first 100 feet of shaft through overburden. A smaller casing has six 2 and 1-inch steel pipes welded to the outside to carry compressed

Squeeze plan

Contractors and Engineers staff article

Mining a gas-storage cavern is like pushing a bulldozer through a culvert. It can be done, but it takes a little ingenuity.

In the mining of a propane cavern in Omaha, Nebr., all men, material, and equipment had to squeeze through a single 42-inch-diameter shaft. One of the trickier parts of the operation was lowering a 1½-yard front-end loader down the narrow shaft.

The 6-million-gallon storage facilities have recently been built for the Metropolitan Utilities District of Omaha to take care of peak loads on its distribution system. Fenix & Scisson, Inc., Tulsa, Okla., was the general contractor on the $800,000 storage facilities, while Layne-Western Co., Omaha, handled the drilling of the shafts.

The underground storeroom for liquid gas consists of a network of tunnels in shale some 300 feet below the ground. The 10-foot-wide 25-foot-high tunnels are mined on a checkerboard pattern; 50-foot squares separate them. The result is something resembling a basement with 10-foot-wide corridors adjoining 50-foot-square columns. The pattern of tunnels occupies an area of about 350 × 400 feet.

Rising from the center of the tunnel complex to ground level is a 42-inch-diameter steel-lined shaft. The shaft must be held at a small diameter to make it possible to cap it

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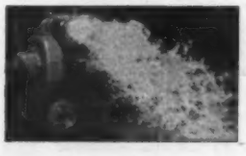

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Equipment for carving out the tunnels had to be disassembled and lowered in pieces to crews at the bottom of the shaft for reassembly. The engine of an Allis-Chalmers HD-6 front-end loader is being delivered to mechanics at the base of the shaft. The bucket of the rig had to be sliced in two on the surface and welded together by these crews.

Blasted or ripped shale is excavated for the 10 × 25-foot tunnels by the HD-6 and brought to a loader that works near the bottom of the shaft. No shoring is needed in the tunnels because the roof follows a layer of limestone.

plar tunnel crews

against the eventual pressure (about 100 psi) of the stored gas. It is through this shaft that the mining operations were carried out.

Three auxiliary shafts, 12 inches in diameter, also rise from the cavern to the surface. These smaller holes were used for ventilation during construction. With the mining completed, the holes are now used for surface-operated pumps that can withdraw the gas from storage.

One of the first steps in the construction was to drill the 300-foot-deep main shaft. Since the shaft had to be exactly plumb, a 16-inch pilot hole was first drilled. After the alignment of the smaller hole was checked, it was enlarged to 50 inches in diameter.

A larger hole was required for drilling through the top 100 feet of overburden. This 56-inch hole was protected from caving in by a 50-inch steel casing. In drilling through

(*Continued on next page*)

This Elmco loader, one of two operating in the hole, scoops up mined material that is stockpiled by the tractor-loader and throws it into buckets that are pulled up the shaft. It took some 40 seconds for hoisting, dumping, and returning buckets.

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(Continued from preceding page)

A tipple above the shaft contains hoisting equipment for raising and lowering the 1/3-yard buckets. The dumped material is pushed off to one side by a front-end loader. At left is a battery of portable compressors that supply air to the cavern for ventilation and for powering the loaders.

the lower 200 feet of shale, a 42-inch casing was eased into a hole that was approximately 48 inches. The smaller casing extended up through the larger casing, which was left in place.

As the 40-foot lengths of 42-inch-diameter casing were lowered into the hole, their ends were welded together. Along the outside of the casing were welded three 2-inch and three 1-inch air-supply lines. After the casing was in position for the depth of the hole, it was grouted in place.

A truck-mounted rig, similar to those used in oil-field work, was used for drilling the shaft. Shaped like an inverted Christmas tree, the business end of the drill consists of five stages of gearlike cutters mounted on a rotating shaft. Water was used to pull the cuttings away from the drill and bring them to the surface.

Tight squeeze

Once the shaft was in place, men were lowered to the bottom to start hand-digging operations. Using air spades and hand tools, they slowly dug out enough room to work in. As the tunnel became larger, machinery and blasting replaced the hand operation.

The first equipment used in the tunnel was two Eimco air-powered loaders that had to be disassembled and lowered piece by piece into the hole. The small loaders were soon followed by two larger Allis-Chalmers HD-6 front-end loaders. These were taken apart piece by piece at ground level and then lowered through the 42-inch shaft. The engines went down in one piece, but the 1½-yard buckets had to be cut down the middle before they would fit. Mechanics reassembled the loaders at the base of the shaft, and welded the buckets back together.

Moving mined material

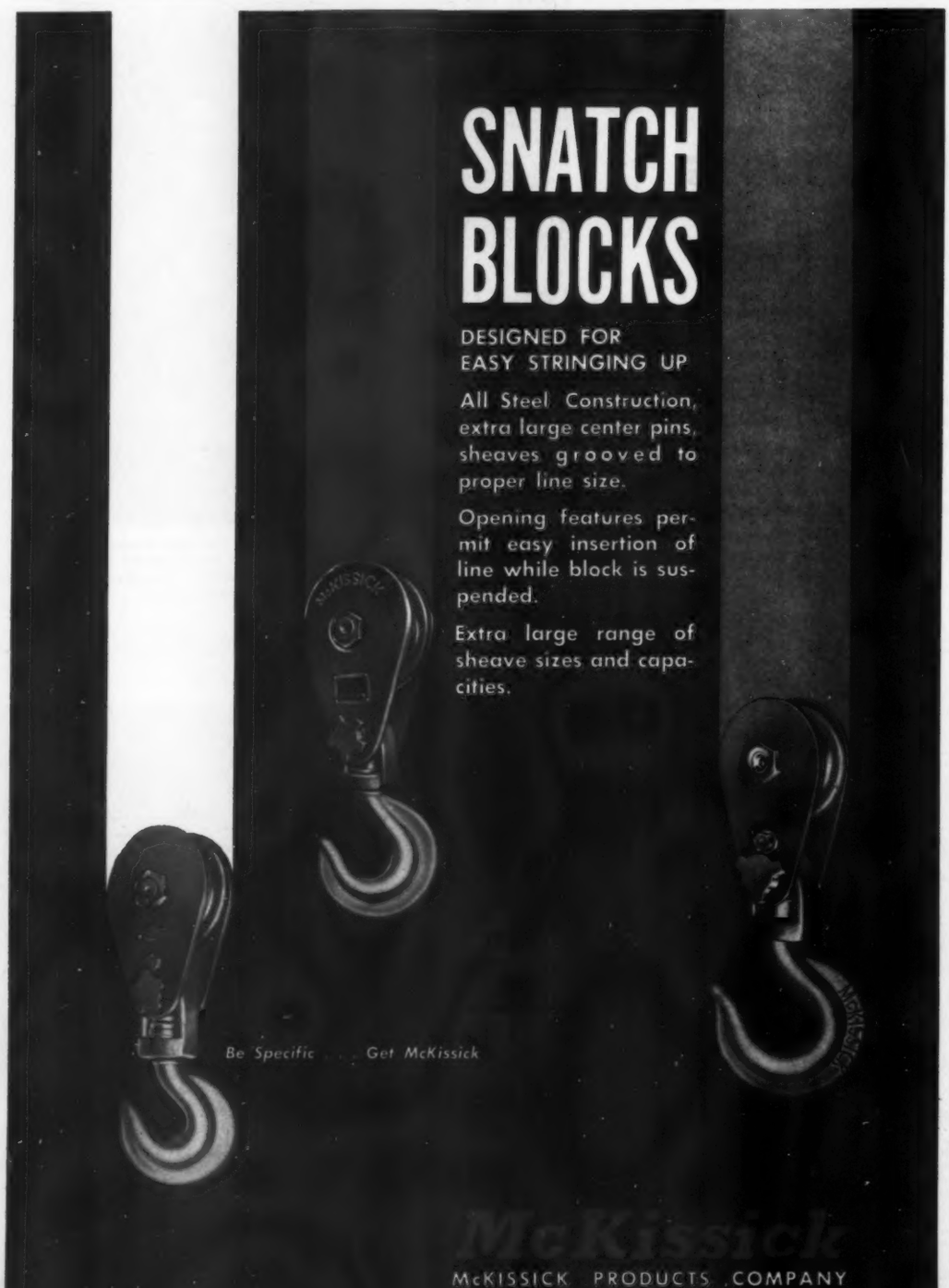
In the mining operation, blast holes were sunk with air-operated drills. The drilling went forward on the upper face of the tunnel, and subsequently went downward for blasting out the lower portion. No bracing was necessary for the tunnel roof, which followed a layer of limestone just above the shale.

After blasting, the tractor-mounted front-end loaders moved in to scoop up the loose shale. Sometimes it was possible to rip the soft shale instead of blasting it. The loaders carried the material to stockpiles about 35 feet from the main shaft. From here, the rail-riding Eimco loaders picked up the material and dumped it into 1/3-yard buckets. The buckets were then hoisted up the shaft and dumped. When the work was in full production, one of these buckets made a round trip every 40 seconds.

Ventilation

Air for ventilating the cavern was supplied by Joy reversible blowers that also exhausted smoke and fumes through three 12-inch auxiliary holes. The general flow of the air was down the main shaft, through the tunnels, and then up the smaller shafts.

In order to handle the hoisting of men, equipment, and mined material, a tipple was built at ground level above the shaft. The steel tower held the hoisting equipment in an enclosed section. Each bucket was dumped from the tower into a chute. From the end of the chute, the material dropped about 20 feet to ground.


SNATCH BLOCKS
DESIGNED FOR EASY STRINGING UP
All Steel Construction, extra large center pins, sheaves grooved to proper line size.
Opening features permit easy insertion of line while block is suspended.
Extra large range of sheave sizes and capacities.
Be Specific . . . Get McKissick
McKissick
McKISSICK PRODUCTS COMPANY
Drawer 768 • Tulsa, Okla.

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All in all, the tricky mining operation went smoothly. No unexpected faults or ground water were encountered in the tunneling.

Personnel

For the Metropolitan Utilities District, Ben Altman was the engineer in charge. Martin Lesser was the inspecting engineer. For Fenix & Scisson, Inc., G. B. Blake was superintendent. THE END

New Hampshire program for quick snow removal

■ When sparks fly out from under a New Hampshire snowplow blade, it's a safe indication that this northern New England state is freeing highway pavements of snow and ice as quickly as possible following a storm.

The New Hampshire Department of Public Works and Highways has found three elements to be essential in keeping its 3,400 miles of state highways clean and bare during the long, busy winter season.

First is the "angle" for close plowing. The usual practice of laying the blade back at about a 45-degree angle is bound to leave some snow cover after the road has been plowed, and continual use by traffic often causes a layer of frozen, compacted snow or ice to form, creating hazardous driving conditions.

New Hampshire's maintenance men have solved this problem with the "contact" method of plowing—running the plows on their cutting edges. The full weight of the plow bears heavily down on a forward-tilted, almost vertical, cutting blade as it digs deeply into the snow, causing the sparks to fly as the pavement is scraped.

This method of plowing has resulted in the development of a method of strengthening the cutting edge of the blades by welding to them narrow strips of carbon steel. One face of these strips is heat-hardened, and this, plus the added thickness of the cutting edge, not only results in less wear on the blades but prevents a curling of the edges which would reduce their effectiveness. All welding and heating operations are performed by highway department employees on machines designed and built for this special process.

The second element is chloride spreading (mostly sodium) to prevent the formation of ice and help keep the plowed pavements bare, dry, and safe for winter traffic. The department's "cold-weather research" engineer some 20 years ago originated the method of spreading salt without abrasives directly to state highways.

The third element of efficient winter maintenance is the human one. The state highway department maintenance engineer, LeRoy F. Johnson, says "Without the human element of 650 snow and ice-fighting men, all techniques and equipment would be of little use in combatting the havoc that can be caused by a winter storm. Good equipment, proved methods, and hardy, experienced personnel who often work long hours day and night can produce bare and dry highways within a short time after snow has ceased to fall."

TAKE COMMAND...
WITH MOTOROLA 2-WAY RADIO
TAKE COMMAND! Control every vehicle with split-second 2-way radio contact. Save minutes, miles and money on every call, every day.
TAKE COMMAND! Dispatch drivers directly from job to job—reroute them quickly—capture the dollars now lost through needless backtracking.
TAKE COMMAND! Sharpen your competitive edge with the fastest, most reliable service . . . with customer satisfaction that builds and keeps more business.
INSTALL MOTOROLA—the radio proven best on-the-job . . . with the lowest operating costs and highest reliability. Fast-growing savings quickly pay complete system costs, then return top-profit dividends for years to come. And with nearby Motorola service, you are assured of continuing peak radio performance. Call or write today.
Motorola . . . the communications specialists for industry
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SPaulding 2-6500
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Ex-BPR head under fire on N. Y. Thruway contract

■ Bertram D. Tallamy, former Federal Highway Administrator in the Eisenhower administration, is now the object of a demand in the New York State legislature for an investigation into the contract as a consultant that he obtained from the New York State Thruway Authority.

Tallamy resigned as chairman of the Thruway Authority in 1956 to become head of the U. S. Bureau of Public Roads. The recent contract Tallamy was awarded by the Republican-controlled Authority called for him to receive a $200-a-day fee for a study of the long-range maintenance needs of the 560-mile Thruway. Tallamy is also authorized to use a Buffalo consulting firm, Senior, Bissell & Bronkie, with the Authority paying for salaries and expenses up to $200,000 for the work. Tallamy's son, Bertram F., is associated with the Buffalo engineering firm.

Sverdrup & Parcel changes name

■ Sverdrup & Parcel Engineering Co., of San Francisco, Saint Louis, and Washington, D. C., has changed its name to Sverdrup & Parcel and Associates, Inc., in order to better reflect the nature of the organization, which provides architectural as well as engineering services.

Cat D8 #18 6-30-52 (Sold purchased New)
Dozer 85-1802497
Power Unit 9D19392
1958 Serial 2017879

	WORK HOURS	DOWN TIME	REPAIR LABOR	REPAIR PARTS	
	hrs 3498		$1960.70	$1313.30	Totals carried forward
Jan	1 hr 12 hrs		$446.40	$566.05	Jan.10,1958 Front idlers rebuilt, new seals new wearing bars. All new Caterpillar rollers(500 hrs). Inner and outer hub bearings, new, both sides. New bellow seals, both sides. Sprockets one yr. old. Brakes relined. Pumps and injectors, checked and cleaned. Master clutch - new lining, new pilot bearings, new shackles. Thermoid links, engine relined. *---
(Factory Rec.) Feb (Operating Hours)	2 21	not recorded	$9.00	—	
Mar	6 69		—	—	
Apr	9 150		$10.10	—	
May	9 159		$143.34	$249.15	

Figure 1.

DAILY SHOP WORK REPORT

NAME Jack Jones DATE July 7 1960
HOURS FROM 8:00 AM TO 4:30 PM NO. OF HOURS 8

Mach. No.	Work Done	Hrs.	Rate	Amt.
D6 #4	Check and clean pump, injectors	1	$2.00	$2.00
D6 #4	Brakes Relined	3	$2.00	$6.00
TD24 #30	Reline clutch	4	$2.00	$8.00

(CONTINUED ON OTHER SIDE)

Figure 2

DAILY FUEL REPORT

DATE 4-15-60

MACHINE	FUEL	OIL	LOCATION	MACHINE	FUEL	OIL	LOCATION
Bay City #4	15		South St. Paul				
Bay City #5				HD 15 #29	40	2	Haton's Pit
Bay City #6	#1		Hiway 10 & 100	D 8 #13	30	1	" " "
22B #3	27		Airport	D 8 #21	21		Airport
22B #4	22	1	2400 E. Minn.	D 8 #28	10		Sinth School
22B #5				TD 24 #29			
22B #6				TD 24 #30			

Figure 3.

Watch cost

Contractors and Engineers staff article

In these days of slim profits and fierce competition, Carl Bolander & Sons Co., Minneapolis, finds it doubly important to keep an accurate record of operating costs.

The company took a critical look at its own cost accounting about four years ago and revised the system to better suit its needs. Since the firm makes use of a lot of heavy equipment, particular attention was focused on keeping track of equipment costs. Knowing these costs, Bolander was able to figure the over-all cost of a job more accurately. It was able

Biggest news in '61

J-RAM

Another RELIABLE tamper by Jay

Compacts clay fast • Saves on labor • Cuts downtime

This new Jay Tamper gives better, faster earth compaction. Savings up to 90% and more. Easy to meet Proctor density spec. . . . under foundations, in ditches, under slabs. Weighs only 135 pounds. Engine 4-cycle, cast-iron—450 to 675 blows per minute. Choice of tamping plates. Saves "downtime" expense. Get a demonstration; find how Jay Tampers can save and EARN money for you.

JAY tampers Best on Earth

Jay Company Division, J. LEUKART MACHINE CO., INC.
2222 S. Third Street, Columbus 7, Ohio

For more facts, use Request Card at page 18 and circle No. 269

"PRECISE POWER" FOR EVERY CONSTRUCTION JOB

The name Continental has real dollars-and-cents meaning for users of specialized power—and for dealers who sell Continental-powered equipment. Among the many reasons are the broad diversification of the Red Seal line—one or more engines with exactly the right characteristics for virtually every construction job—and the fact that after-the-sale service is making them first choice for an ever-widening list of jobs in the building industry—wherever power is required.

Continental Motors Corporation
MUSKEGON • MICHIGAN

ESTABLISHED SERVICE FACILITIES ALL OVER THE WORLD

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CARL BOLANDER & SONS CO.
EMPLOYEE DAILY REPORT

Name	John Hardhat		
Classification	Operator		
Machine and No.	TD24 #29		
DATE	START	QUIT	TOTAL HRS.
4-5-60	8:00	4:30	8

JOBS AND MOVES	HRS.
Airport	8

REPAIR TIME	STANDBY	SERVICE
		1/2

LEAVE BLANK

Figure 4.

Ivar Bolander, president of Carl Bolander & Sons Co., Minneapolis, Minn.

JOB SUMMARY

FOR Holdigger Const. Co. (Subcontract)

JOB Grading Hgwy 12

FROM 2-21-59 THRU 9-5-59

COST

PAYROLL	$40,511.21
PR INS & TAX	4,861.35 (Pay Roll Insurance & Tax)
CB&S EQUIP.	48,844.60 (Direct Equipment Costs)
RENTED EQUIP	5,737.24
SUB-CONTRACT	— 0 —
MATERIALS	— 0 —
JOB EXPENSE	7,666.08
O. H. ASSIGNED	15,983.45
Total	123,603.93

INCOME

CONTRACT	$131,188.64
T & M	
OTHER	
Total	

Figure 5.

cost and see profits

Accounting system isolates costs for each machine; hourly rates of rigs summarized for total job cost

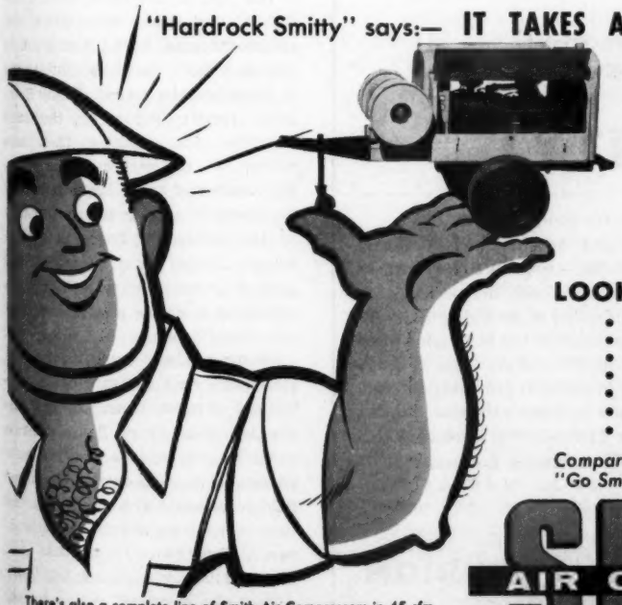
to bid the next job more closely and with a reasonable assurance of a profit.

The cost-accounting system is tailored to fit a rather unusual operation. Working primarily in the Minneapolis-St. Paul area, the company has many small jobs of various types going on at the same time. At one time last season, it had to keep track of 56 different jobs. Many of these are done under subcontract.

Under the direction of Ivar Bolander, who started the business with his father Carl Bolander, in 1921, the company has grown until it now handles a $3 million annual volume. The firm has its fingers in many pies. Bolander does excavating, highway and site grading, sewer and waterline work, pile driving, and demolition. Although most of the jobs are not large, the company occasionally picks up a fair-sized highway grading job in a neighboring state.

For this type of diversified operation, the company needs a lot of machines. At the present time, it has about ninety major pieces of equip-

(Continued on next page)



"Hardrock Smitty" says:— IT TAKES A SMITH 125 AIR COMPRESSOR TO DELIVER ON THE TOUGH JOBS . . .

Built to "take it" when the going get tough, the Smith 125 Air Compressor will give you years of low cost, dependable service. The Rugged Hercules Industrial engine delivers over 125 c.f.m. hour after hour, day in and day out.

LOOK AT THESE FEATURES:

- low initial cost
- low operating cost
- easy maintenance
- simple, compact design
- 12 volt electrical system
- 125 c.f.m. at 1165 rpm
- operates two 85 lb. paving breakers at same time

Compare price . . . compare job results—you'll "Go Smith" with "Hardrock Smitty"!

There's also a complete line of Smith Air Compressors in 45 cfm and 75 cfm models, both portable and stationary.

Ask your dealer for an "on the job" demonstration. (write us for complete information and the name of your nearest dealer.)

SMITH AIR COMPRESSORS

GORDON SMITH & COMPANY, INC., Bowling Green, Ky.

For more facts, use Request Card at page 18 and circle No. 271

TARCO
Pots, Buckets, Squeegees

All sizes and styles for handling HOT or COLD Tar or Asphalt.

For these jobs: Crackfilling, Pavement Construction and Repair, Waterproofing, Pipe Coating, Sealing, Dust Laying, Carrying.

All pots and buckets are made of all welded steel (no crimping, no soldering, no riveting). Perfectly balanced, no-splash hoods, wide comfortable handles.

Ask your nearest dealer or write for details

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31 Jumel Place, Saratoga Springs, N. Y.

For more facts, circle No. 272

Here are some more of the people who make the cost-accounting system work in practice: Ben Longman, seated, the company accountant who developed the system, goes over some details with company secretary Roger Erickson.

Accuracy of the system depends, however, on men like dozer operator Harry Lawrence, at right, who is filling out his Employee Daily Report.

Only eight hours transmission downtime per unit in approximately 2700 hours of operation over a period of 2½ years averages out to

99.71% AVAILABILITY!

A. F. Keyes Co., Inc., South Milwaukee, Wisconsin, is using Fuller 5-G-1520 5-speed Transmissions in four Le Tourneau-Westinghouse Scrapers on construction projects in southwestern Wisconsin. None of the four units has had more than eight hours of transmission downtime—and each has logged more than 2700 hours of operation.

Two of Keyes' L-Ws are Model B Full Packs, and two are Model B BM-2s. The constant-mesh, spur-gear Fuller 5-G-1520s feature, as standard equipment, the Fuller air-actuated countershaft brake, which permits quick, easy up-shifts without double clutching. Also standard on the 5-G-1520 is the Fuller pressure lubrication and filtration system, which keeps gear oil clean, provides longer gear and bearing life and increases availability for your operation.

Bernard Schuh, Chief Mechanic for Keyes, says, "We're extremely pleased with both the performance and reliability of the Fuller 5-G-1520 Transmission. If you buy a good piece of equipment and take care of it, it's going to perform profitably for you. And that's certainly the case with the Fuller Transmissions in our LeTourneau-Westinghouse Scrapers.

FULLER TRANSMISSION DIVISION

EATON MANUFACTURING COMPANY

KALAMAZOO, MICHIGAN

Sales & Service: West. Dist. Branch, Oakland 6, Cal. • Southwest Dist. Office, Tulsa 3, Okla. • Automotive Products Co., Ltd., Brock House, Langham St., London W.1, England, European Rep.

For more facts, use Request Card at page 18 and circle No. 273

management

(Continued from preceding page)

ment, including 12 cranes, 11 scrapers, 23 dozers, and 21 trucks.

Since equipment operation and maintenance require the largest expense, Bolander makes a considerable effort to keep track of it. The firm wants to know as closely as possible just how much it costs to own, operate, and maintain each piece.

Here's how Bolander does it:

Direct costs on a certain rig are considered to be made up of these items: (1) repair cost—a sum of the cost of parts, labor, and repair overhead; (2) cost of fuel and oil; (3) cost of servicing (greasing) a rig; and (4) depreciation.

Repair costs

Repair costs on each piece of equipment are recorded and transferred each month to an equipment card (Figure 1). Parts, which are bought from a dealer as needed, are invoiced to a specific piece of equipment. The price of the part is recorded on the equipment card.

The cost of the labor for installing the part is also recorded on the equipment card. This information is compiled from the daily time cards of the mechanics. Called a Daily Shop Work Report (Figure 2), the card identifies the machine that was worked on, the nature of the work, the number of hours spent repairing the machine, and the hourly pay rate of the mechanic. There is also a column headed "Amt." for the total amount of the labor cost. This is obtained by a simple multiplication of rate times hours.

Repair overhead (supervision, heat, electricity, etc.) is figured as a percentage of repair labor. The percentage is an arbitrary figure that is decided upon after a careful comparison of previous over-all shop and field-repair costs with direct shop and field-repair costs. From this percentage, the company knows that if it spends $100 for a mechanic's labor, it must also spend "X" dollars to take care of the repair overhead.

For cost purposes, the quantities of fuel and oil going into each rig are recorded. The quantities are noted on

a Daily Fuel Report (Figure 3) by the operator of the fuel truck. One fuel truck makes the rounds of all the jobs in the metropolitan area. The report notes the particular rig and its identifying number; quantity of fuel delivered; quantity of oil; and the location of the machine. The report is on a sheet of 8½ × 12¼-inch stiff paper that can take abuse and field handling.

Personnel knowing the number of hours a machine has worked on a certain job, and the amount of fuel and oil that has gone into it, can easily calculate the cost per hour of fuel and oil. The Daily Fuel Report is also helpful for the head mechanic in determining when a rig needs repair. When oil consumption becomes excessive, it's a good indication that a rig needs an overhaul. The report also serves as an additional means of keeping track of where the equipment is working. In addition, it insures the honesty of truck drivers who might be tempted to divert a portion of the gasoline being supplied to their trucks.

Service cost

The labor of servicing a rig is a direct cost. Generally, the operator takes a half hour at the end of the day to grease his own rig. This time is noted on his time card. The total number of service hours is tabulated on the equipment card.

Depreciation is figured as a direct cost. The figure for each piece of equipment is arrived at through some involved calculations and considerations.

Thus the cost of parts, repair labor, repair overhead, fuel and oil, servicing, and depreciation can be totaled for a particular machine for a given number of working hours to get a direct operating cost per hour. Average hourly costs are obtained by considering the machine's performance over a period of at least one year.

Machine working hours

To keep track of working hours of a machine, Bolander uses payroll hours rather than readings from hour meters attached to the machine. The company has found that readings on different makes of hour meters vary widely. The meters are also difficult to keep in operation.

The machine working hours are taken from the operator's time card or, as it is called, Employee Daily Report (Figure 4). The card tells what machine the employee is operating and for how long on a particular job. There are additional blanks for service and field-repair time. A space for standby time is included on the card, but it was found to be impractical since both operators and foremen were reluctant to admit nonproductive time and the figures coming in were not accurate. At the very bottom of the card is a place for an office man to check and verify the hours. The office man checks the operator's time against another report submitted by the foreman.

Although no record of hours of down time is kept on each machine, a good indication of down time can be obtained by looking over the extent of repairs on the equipment card, (Figure 1). Down time is listed on the equipment card, but it is not recorded since it proved difficult to get a true figure on this item because no one wanted to admit nonproductive time.

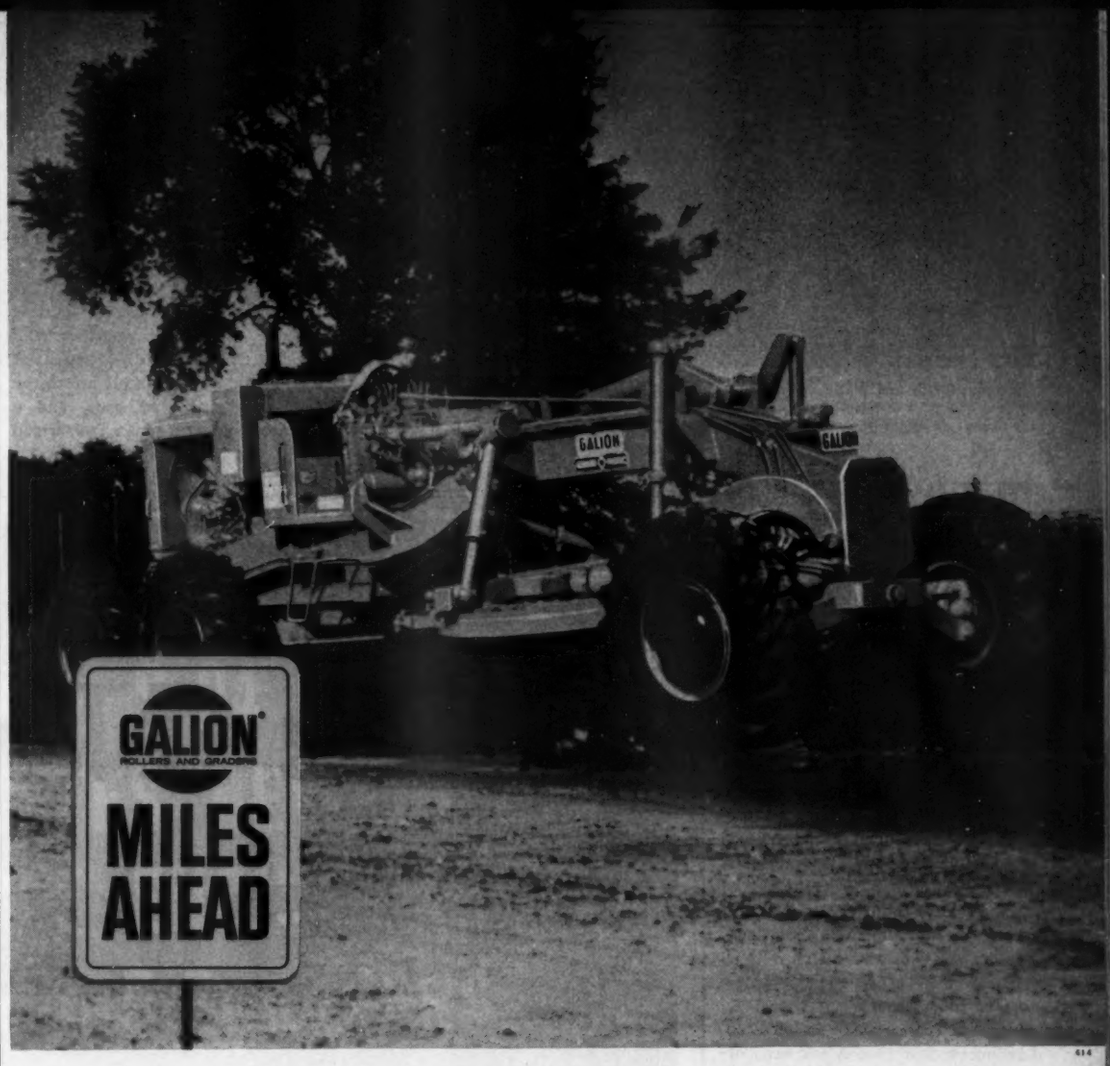
An equipment card is kept in a home-office file for each piece of equipment owned by the contractor. Each side of the 8½ × 11-inch sheet covers one year's operation. At the top of the sheet is a description of the rig—serial number, engine number, model number, contractor's identification number, and the date the machine was purchased. There are monthly totals to fill out for Work Hours of the machine; Repair Labor; and Repair Parts. (Down Time is not filled in.) A detailed description and the date of each repair is given in the blank space at the right. Hours of service time are inserted under Work Hours as a separte figure. Totals of all hours and all costs are carried through from year to year.

Over-all job costs

One of the main reasons for arriving at an hourly cost for each piece of equipment is to be able to determine the total cost of a completed job. For this calculation, Bolander uses a Job Summary form (Figure 5). One of the main cost items on this form is "CB&S Equip." This is the direct cost of Carl Bolander & Sons equipment. It is a combined total of the cost of each piece of equipment on the job. The cost of each rig is found by multiplying the machine hours by the average hourly cost rate.

Other cost items for the job are listed as Payroll; Payroll Insurance and Tax; Rented Equipment—cost of equipment rented by Bolander; Sub-Contract—cost of subcontracted work; Materials; Job Expense—which includes miscellaneous expenses incurred on the job that cannot be charged to overhead or to any other item; and O.H. Assigned—overhead assigned to the job.

Overhead assigned to the job is figured as a certain percentage of the individual cost items. These arbitrary percentages are determined from a



614

It's the World's largest grader (with savings to match!)

When you must move tremendous amounts of materials fast—grading, ditching and sloping against tight schedules—no machine does it as profitably as the Galion Grade-O-Matic pictured. Look at it this way . . .

It's a lot more than just the biggest motor grader made—this Model T-700 is engineered to give you maximum "push-power" at the blade, smooth, shockless operation and the utmost in tractive effort on any job.

It's a kingsize 220 hp grader with a balanced weight of some 42,000 pounds. Standard equipment includes the Galion Grade-O-Matic Drive that combines torque converter, power-shift transmission and tailshaft governor for swift, effortless automatic operation.

GALION® ROLLERS AND GRADERS

For complete information contact your Galion distributor or write for Bulletin 409-C.

THE GALION IRON WORKS & MFG. COMPANY, GALION, OHIO, U.S.A.

General and Export Offices, Galion, Ohio, U.S.A.—Cable Address, GALIONIRON, Galion, Ohio

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The operator of this White truck with 1,500-gallon tank keeps records of fuel and oil consumption for each piece of equipment as he makes his rounds of jobs in the metropolitan area.

Black & Decker to make Bennett panel saw

■ Black & Decker Mfg. Co., Towson, Md., has obtained an exclusive license from Richard C. Bennett of Laceyville, Pa., to manufacture and sell the Bennett 2-way panel saw in the United States and Canada.

The saw, which is used for cutting plywood, wall board, plastics, and other large sheet material, consists of a frame into which sheets are placed against a graduated scale, and a bracket, holding a power saw, which can be moved vertically or horizontally across the sheet, cutting to precise dimensions. The complete unit incorporates a Black & Decker portable electric saw, which Bennett has been purchasing from the company.

The Bennett saw will be manufactured in the plant of B&D's subsidiary, DeWalt, Inc., at Lancaster, Pa., and will be sold by the DeWalt sales organization through its established network of dealers.

management

(Continued from preceding page)

consideration of the company's overall overhead on a yearly basis. The over-all overhead is apportioned among various services or goods that the company sells. It sells a lot of equipment service, so a large percentage of the overhead cost is apportioned to equipment costs. The equipment not only has to pay for itself, it also has to pay for a large share of the overhead. The overhead includes indirect costs on equipment. A certain percentage of overhead is assigned to Payroll, a certain percentage of Materials. On a particular job, the overhead assigned is a summation of the different percentages of the different cost items; X per cent of Payroll plus Y per cent of Equipment Cost plus Z per cent of Materials, etc., equals Assigned Overhead.

All the cost items on the Job Summary sheet are totaled to give the cost of the job. At the bottom of the sheet, the cost figure is compared with the income. Because of accurate cost accounting, the money coming in generally exceeds the money going out.

Ben Longman, the company accountant who developed the system, says, "A good cost-accounting system is a useful tool. Although the system never replaces good judgment it reduces the area in which good judgment is necessary. This sometimes makes the difference between profit and loss." THE END

Hyster division names

■ Don W. Smith is the New Midwest regional representative for the Industrial Truck Division, the Hyster Co., Portland, Ore. He will assist Hyster industrial-truck dealer sales personnel in the 12-state area.

Smith has been associated with Hyster in Chicago since 1958.

Daniel Construction names new veep

Buck Mickel is the new executive vice president of Daniel Construction Co., Philadelphia, Pa.

With the company for 14 years, Mickel has served in the capacities of field engineer, cost engineer, estimating and project manager.

It's New!

"EUC" S-24

△ MORE POWER . . . 432 h.p. with GM 12V-71 engine.

△ MORE CAPACITY . . . 24 yds. struck, 32 yds. heaped, 80,000 pound payload.

△ MORE WORK-ABILITY . . . Torqmatic Drive with converter lock-up and splitter gear that matches power and speed to every job requirement.

△ MORE DEPENDABILITY . . . job proved components and design features.

△ MORE SERVICE ACCESSIBILITY . . . engineered for easy servicing and maintenance that cuts downtime.

HERE'S BIG NEWS for users of big scrapers! The new Euclid S-24, with payload capacity of 80,000 pounds and 24 yds. struck capacity (32 yds. heaped), is ready for your big yardage projects.

Powered by a 432 h.p. engine with Torqmatic Drive, this new "Euc" is 'way ahead of even the newest big single-engine scrapers. Have your dealer show why this S-24 belongs in your profit picture and can be your ace-in-the-hole for that next bid!

EUCLID Division of General Motors, Hudson, Ohio

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

GM GENERAL MOTORS EUCLID

EUCLID

FOR MOVING EARTH, ROCK, COAL AND OR

Preparing the surface of the steel grandstand deck at Pimlico Race Course, Baltimore, for application of a protective coating of epoxy resin required sandblasting of a 15,000-square-foot area. This took four weeks because of difficulty in removing the old asphaltic coating.

Epoxy coating replaces asphalt on steel deck

A protective coating of epoxy resin has replaced 6-year-old asphaltic material on 15,000 square feet of steel deck plate on the grandstand of the Pimlico Race Course. The improvement is part of a program in which more than $2¼ million has been spent in the last two years for expansion and modernization of the Baltimore, Md. track.

Some of the new construction projects at Pimlico include a 4-story clubhouse, a new indoor paddock, modern jockey quarters, and new administrative offices. All stands have been enclosed in glass and are heated to permit autumn racing events.

After service on the grandstand deck for six years, the asphaltic coating was no longer offering protection to the steel, which was subject to rust, scaling of the surface, and loss of section thickness. An epoxy-resin was selected to replace the asphalt because of its good adhesion to steel, toughness and resistance to wear, and for the barrier it provides to atmospheric corrosion. Field experience with coatings of this type indicates that the grandstand should not require recoating for at least 10 years.

Renovation of the decking, handled by Kuehnle & Wilson of Maryland, Inc., Baltimore paint and plastic applicator, called for removal of the asphaltic material and application of a 3-coat epoxy formulation. Farbo-Tile floor-coating system No. 80 was selected, a product curing at atmospheric temperatures to a hard, flexible surface coating. This formulation is designed to expand and contract with the base material, and to maintain its elasticity on aging. A product of Farboil Co., Baltimore, the coating offers good resistance to wear and abrasion.

Preparation of the surface

The condition of the surface makes it necessary for the steel to be taken down to white metal. Sandblasting removed asphalt and rust from the deck plate, but the flexing of the asphalt under blast slowed down penetration and removal of the coating. The job took four weeks and required over 140,000 pounds of sand.

After an area had been sandblasted, the Farboil epoxy red lead primer coat was applied by brush to the clean surface. No sandblasted area was permitted to go overnight without a primer coat. This coat resulted in a dry film thickness of 3 to 4 mils when applied at the rate of about 200 square feet per gallon.

Mixing the epoxy material

The floor coating is a 2-part formulation based on Shell Chemical Co.'s Epon resin and a curing agent. After the two parts are mixed together on the job, the coating material has a pot life of 12 to 16 hours before it be-

(Continued on next page)

EUCLID S-24
OBSOLETES "NEWEST"
SINGLE-ENGINE
OVERHUNG SCRAPERS

432 HP... 80,000 pound PAYLOAD

◀ For more facts, use Request Card at page 18 and circle No. 275

Mixing of the Farbo-Tile floor coating in 5-gallon batches was done by hand an hour before application. The coating consists of Epon resin and a curing agent.

The epoxy coating is applied with conventional spray equipment, using a special nozzle to minimize overspray. Two coats were applied over a primer coat of epoxy red lead at the rate of 125 square feet per gallon.

For more facts on insert, use Request Card at page 18 and circle No. 271

(*Continued from preceding page*)

gins to harden in the container. This time is sufficient to apply the coating in conventional spray-gun equipment without difficulty. Each batch was mixed by hand in 5-gallon lots about an hour before it was needed.

Application of the second and finish coats to the 15,000-square-foot area required three 8-hour days each with a crew of six men. These coats were applied by conventional spray equipment, with a special nozzle designed to minimize overspray. The nozzle had a ⅛-inch opening. Spray equipment was operated at pot pressure of 40 psi and atomization pressure of 80 psi. These two coats were applied at the rate of 125 square feet per gallon for a dry film thickness of 12 to 14 mils. Total film thickness of the three coats is 25 to 28 mils.

Each coat was permitted to dry overnight before the next coat was applied. Twelve hours was adequate for drying. After 24 hours, the coating had cured well enough to permit moderate service. Full cure requires seven days, at which time the coating reaches maximum toughness and resistance to wear. THE END

Full cure of the coating requires 7 days, although after 24 hours it permits moderate service.

Detroit Diesel promotes

■ The Detroit Diesel Engine Division of General Motors, Detroit, Mich., has named Stanley C. Partel manager of the division's Washington office for government sales. He succeeds J. Kenneth Hampton, who has retired.

Partel has been assistant to Mr. Hampton in the Washington office since 1957. His new assistant will be Fay Marvin, formerly with the division's government-sales department in Detroit.

United Engineers names

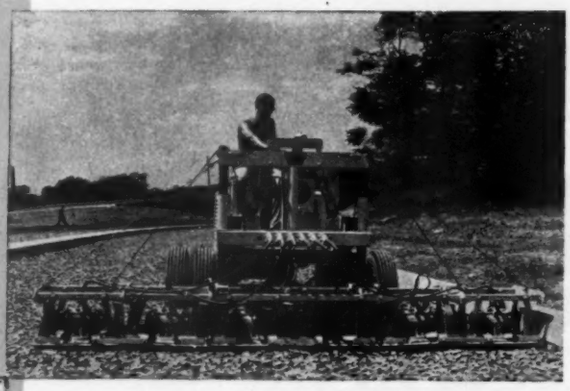
■ New assistant vice president in the new-business department of United Engineers & Constructors, Inc., Philadelphia, Pa., is Gustave A. Hechscher. He was previously new-business representative for the company.

United Engineers specializes in the power-generation, metal-working, and chemical-processing fields.

For more facts, use Request Card at page 18 and circle No. 276

RENT A JACKSON

IT'S A SOUND, NO-RISK WAY OF DISCOVERING THE FASTEST, MOST EFFECTIVE AND BY FAR THE MOST INEXPENSIVE METHOD OF COMPACTING GRANULAR SOILS; BASE COURSES, FILLS AND SOIL-CEMENT MIXES.



Changing from the 13 ft., 3 inch working width to 88 inches overall for road travel or maneuverability on the job is accomplished hydraulically in just 30 SECONDS.

As one contractor on a federal highway project put it: "We rented this vibratory compactor from our dealer just for this job, but we're so pleased with its performance that we'll probably buy it. It has the versatility and punch to handle all our compacting, both big and small jobs, on slopes and level ground — QUICKLY."

VERSATILITY? Look at the illustrations. Then consider, too, that the individual compactor units may be fitted with operating handles and used as self-propelling units to compact the tight places other equipment can't touch. Also that the JACKSON operates in either direction, no deadheading or turning around is required.

PUNCH? 4200 3-TON BLOWS PER MINUTE from each of the compactor units provide extremely high productivity. 100% of specified density is frequently attained in a single pass. And the JACKSON does not leave the top 1-inch of the lift in a loose condition . . . a very important consideration. Maintenance and operational costs are extremely low.

The new widening attachment (optional at added cost) is raised or lowered instantly. Makes the JACKSON by far the most efficient compactor for widening projects.

Discover the outstanding time-and-money-saving opportunities afforded by the JACKSON MULTIPLE COMPACTOR by renting one from your Jackson Distributor. Name and further details on request.

JACKSON VIBRATORS, INC.

LUDINGTON, MICHIGAN

Labor Review

Building trades negotiate an average wage hike of 14.3 cents in 1960

Union wage scales in the construction industry went up an average 14.3 cents an hour during 1960, according to a review of 572 collective-bargaining settlements reported over the year by Construction Labor Report. The average increase is the same as was recorded for 1959, but 0.3 cents under the 14.6-cent average found for the first half of 1960.

Fifteen cents an hour again proved to be the most popular settlement, appearing in about one-third of the new agreements. Ten cents an hour was the next most frequent basis of settlement, appearing in about one-fifth of the new contracts, while increases of 20 cents an hour showed up next often, having been specified in about 11 per cent of the settlements.

The Bureau of Labor Statistics, in its most recent review of union wage scales in the building trades, reported an average 14-cent raise for the 12-month period ending July 1, 1960. As of that date, BLS pegged the average hourly rate, excluding fringes, for all building tradesmen at $3.66 an hour. CLR's survey would indicate that the average rate will exceed $3.80 an hour by mid-1961.

West Coast unions maintained their reputation for above-average settlements. The average increase negotiated by unions in the western states during 1960 was 18.6 cents an hour. The comparable figure for 1959 was 18.9 cents an hour, and in the previous year, 19.5 cents an hour.

Unions in the Northeast also settled for above-average wage increases last year. The average hourly raise for building tradesmen in New England, New York, Pennsylvania, Delaware, Maryland, and the District of Columbia was 15.4 cents an hour. Of particular significance were agreements negotiated in New York City, where 3-year settlements generally carried 75-cent wage packages, plus added fringe benefits.

Unions in the South again trailed, settling on the average for just under 12 cents an hour, while the average increase in the Midwest was 14.1 cents an hour, and the average in the Rocky Mountain states was 13.8 cents.

Again, 2-year agreements proved to be most popular, and about two-thirds of the settlements are for longer than one year. Only in the South were 1-year agreements reached in over half of the settlements.

Indications are that contractors pay for the stability of these long-term settlements. Almost without exception, contracts running for more than one year provide for wage increases in subsequent years, and these increases run higher than the average for the first year. Wage rates throughout the country will go up an average 14.7 cents an hour during 1961 under longer-term contracts negotiated in 1960, and contracts extending for more than two years provide for an average wage increase of 15.3 cents an hour in 1962.

By region, deferred increases in the Northeast will run an average 15.8 cents an hour in 1961. Averages for other areas are: South, 11.0 cents an hour; Midwest, 14.2 cents an hour; Rocky Mountain, 13.7 cents an hour; and Far West, 19.5 cents an hour.

Health-welfare programs, most frequently costing employers 10 cents per man per hour, were reported in over half of the 1960 settlements. Next most popular fringe was pensions, provided in about 28 per cent of contracts concluded in 1961, and some gains were registered by unions seeking employer-financed holiday and vacation benefits.

Thirty-four new or improved vacation programs were noted, for a total of 82 such programs included in contracts settled last year, and seven new or improved holiday plans were reported. Twenty-five of the contracts negotiated last year provide for paid holidays.

Employer-financed apprenticeship and training programs also are on the rise. Thirty-seven of last year's settlements provided for employer contributions, most often 1 per cent per man per hour, for apprenticeship programs. Of these, 11 were instituted or improved, the remainder carried over from previous agreements.

Galveston bricklayers settle with employer associations; take 2-year package

Bricklayers working in the Galveston, Texas, area got an 8-cent increase in hourly pay and the promise of another 8 cents next year, under a new 2-year contract between their union and two employer associations —the Associated General Contractors and the Construction Employers Associations.

Hourly rate for the second year of the agreement will be $4.16.

REACH AND DUMP HEIGHT LIKE THESE

PUT MORE IN THE TRUCK AT LOWER COST

New ML-309 "Moto-Loader"® designed to *your* specifications.

An ML-309—18,000 lb. lift capacity—equipped with a 3-yd. bucket loads out rock at the Lincoln Stone Quarry, Joliet, Illinois.

Before Lorain engineers put pencil to paper to design this latest Lorain Moto-Loader, users were surveyed to find out the features most wanted in a machine of this class. Maximum dump height and forward reach at that height were high on the list.

Lorain came through. *Dump height of the ML-309 is 10' with 16x24 tires, 10'x3" with 18x25 tires. Forward reach at 10 ft. dump height is 3'6".*

It is here, where the work is done, that the Lorain ML-309 pays off; lets you load the big, high trucks fast and efficiently, with an even spread, for maximum profit.

Of course, there are many other fine features in the ML-309. A few are:

4 speeds and full power shift with Lorain's "Moto-Matic" simplified and easy-to-service transmission.

"No hands" forward and reverse. One foot controls travel directions and speeds —frees hands for other operations.

Safety arms. Never a hazard. Excellent side vision.

One piece full-depth frame of heavy, welded sections won't deflect or twist.

New bucket design produces boiling action that fills even in the back corners; produces proper crowning for non-spill carry.

There are many more that can be described by your nearby Lorain Moto-Loader distributor. And ask him for a demonstration. Stack up the "309" against anything in its class. This is the real way to find out how all Lorain features are "balanced" for maximum production.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN®

Does more, faster, for less

PLANTS in Lorain and Elyria, Ohio.
PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ⅜- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 11,000-lb. to 18,000-lb. lifting capacity.
OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

Big Challenge-Cook Earthking truck-trailer units are loaded with 25-yard heaping loads in 75 seconds by a Jebco elevating grader working in a borrow pit to supply material for Interstate junction ramps in south Salt Lake City. The 40-ton haul rigs are pulled by truck-tractors.

Big trucks spee

Contractors and Engineers staff article

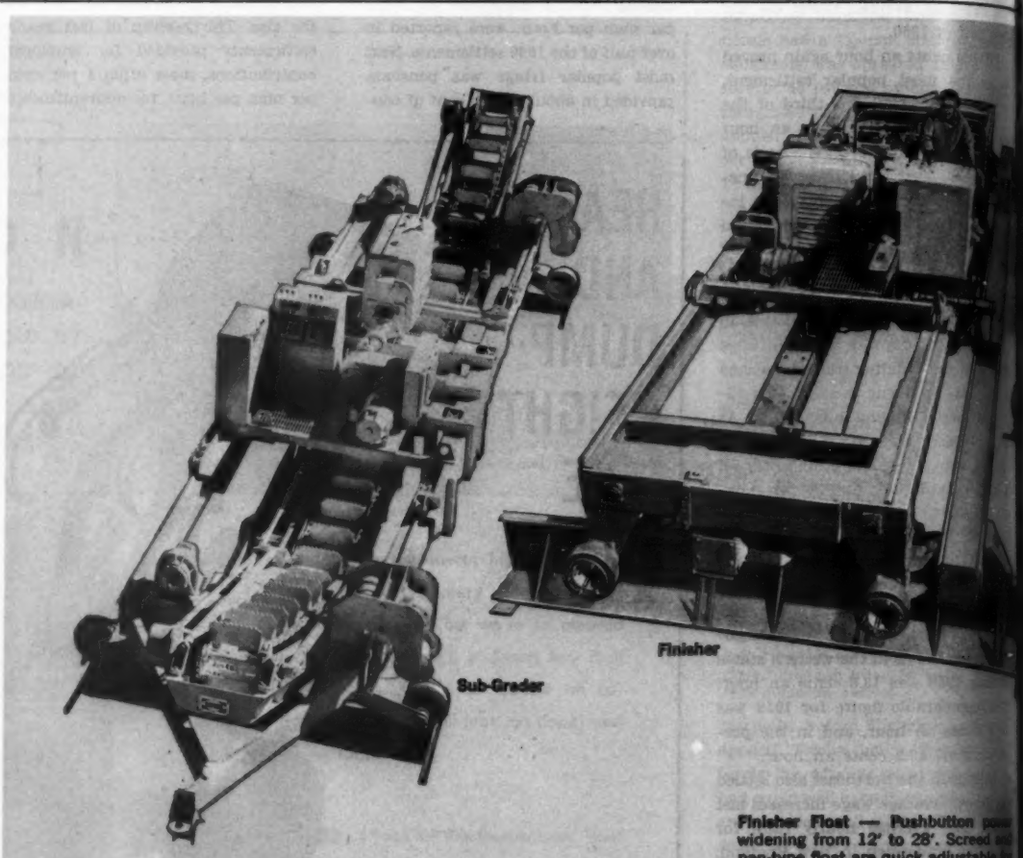
A fleet of big bottom-dump truck-trailer rigs proved their ability in delivering the material to build the interchange ramps for the junction of Interstate I-15 and I-80 in south Salt Lake City. The 1.2 million cubic yards of borrow was loaded by an elevating grader and a conveyor loader and hauled 4½ miles to the embankments.

This was the second phase of the $2.6 million contract that the Utah State Road Commission awarded to W. W. Clyde & Co., Springville, Utah, for the grading in the interchange area. The first phase was the placing of 452,000 linear feet of vertical sand drains and 400,000 tons of filter sand to help stabilize and drain the area

Keeping the long haul road watered and maintained for the high-speed hauling was an important part of the job. This 3,000-gallon trailer tank pulled by an International is loaded at a stream by a Carver 6-inch pump.

As each lift is built and compacted, its surface is scarified by this McCormick-Deering disk pulled by a D8 to provide good bond with the next lift.

A real worker on the project is this Michigan 380 dozer, here tearing up a portion of the embankment that failed to meet compaction requirements and has to be aerated and relaid.



Finisher

Sub-Grader

Sub-Grader—Revolutionary pushbutton power widening from 12′ to 28′. Automatic control system sets frame, conveyor and cutter bowl adjustment up to 4′. Easy-to-add sections readjust conveyor and cutter unit to 8′ to 12′. Entire range of depth adjustment made with synchronized electric power from 0″ to 12″. 14″ of height adjustment for form clearance at each end truck, independently or simultaneously. V-crown adjustment electrically controlled to within 3″. Parabolic crown hydraulically controlled. Electrically-powered travel speeds forward and reverse up to 40 f.p.m.

Finisher — Revolutionary pushbutton power widening from 12′ to 28′ without frame alteration in an infinite range of increments. Frame positions automatically without bolts or clamps. Screeds available in both crown bolt and quick adjustable types. Screed speeds infinitely variable between 40 and 105 strokes per minute, are controlled independently from traction speeds. Traction speeds infinitely variable between 8 and 80 f.p.m. through heavy-duty, high torque, variable frequency AC motors and gear reducers in each end truck. Power supplied by variable speed alternator driven by 4-cylinder engine.

Finisher Float — Pushbutton power widening from 12′ to 28′. Screed and pan-type float are quick adjustable for crown and operating position with synchronized electric power. Suspended oscillating screed is powered from Finisher through electric clutch and universal drive. Float is attached to Finisher and controlled through its own pushbutton controls mounted near the control panel of the Finisher.

Concrete Spreader—Automatic transverse blade delivers spreading action regardless of where concrete is placed on subgrade without segregation. Machine available in two standard widths—10′ to 15′ and 20′ to 25′. Vibratory paving attachment available to compact concrete simultaneously with spreading action. Rubber-tire transportation wheels available for spreader and vibratory attachment.

THE NEW LOOK IN CONCRETE PAVING:

MORE AUTOMATIC,

Here's concrete paving equipment that gives you flexibiltiy and automatic operation to a degree never before possible.

With these new Blaw-Knox machines in your paving train, the day is gone when a change in paving width meant hours of delay in resetting machines. These Blaw-Knox machines give you pushbutton, power widening right on the form!

Check into the features of these new, automatic machines. They'll help you bid closer, work tighter and make more money the day you put them to work! Your Blaw-Knox distributor is the place to get started. Blaw-Knox Company, Construction Equipment Division, Mattoon, Illinois.

...ng borrow haul

A Cat D8 pushes the Adams motor grader and Jebco loader for fast loading of the Earthking units. This arrangement worked well for getting the fine-grain soil in the 60-acre borrow pit, where material was removed to a 15-foot depth.

on which the embankments were to be built.

The sand drains were placed under a subcontract by Raymond International. (The operation was similar to that described in "Sand Drains Stabilize Base for Highway Fills," C&E, December, 1959, page 14.)

The road commission had negotiated for the borrow pit. The agreement called for the excavation of approximately 15 feet of material over an area of some 60 acres. Upon completion, the surface was to be left level. The pit was located some 4½ miles south of the major embankment area.

The contractor's first job was to build a haul road between the borrow pit and the embankment on an area of relatively unstable subsoil. This construction entailed the placing of 150,000 cubic yards of embankment grade and a substantial gravel surfacing. Most of the road was constructed on the alignment of the future northbound freeway lane of highway I-15. Thus, the embankment is not wasted; it will be incorporated into a section of the highway to be built under a future contract.

Maintaining the haul road

Maintaining the haul road under the pounding of the heavy trucks was a continuous job. The most troublesome phase, however, was holding down dust to eliminate any nuisance to the adjacent residential area and to provide safe visibility for high-speed driving.

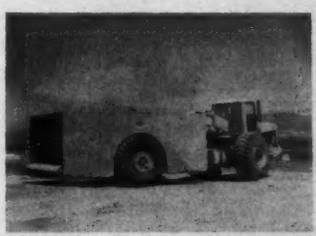
Clyde kept one 3,000-gallon water truck in continuous operation on the road and sometimes called on other water trucks to give it a lift. The water was obtained from a stream crossing the right-of-way and was pumped to the trucks by a Carver 6-inch pump. A Cat No. 12 motor grader kept the road surface in shape.

Grader and belt load trucks

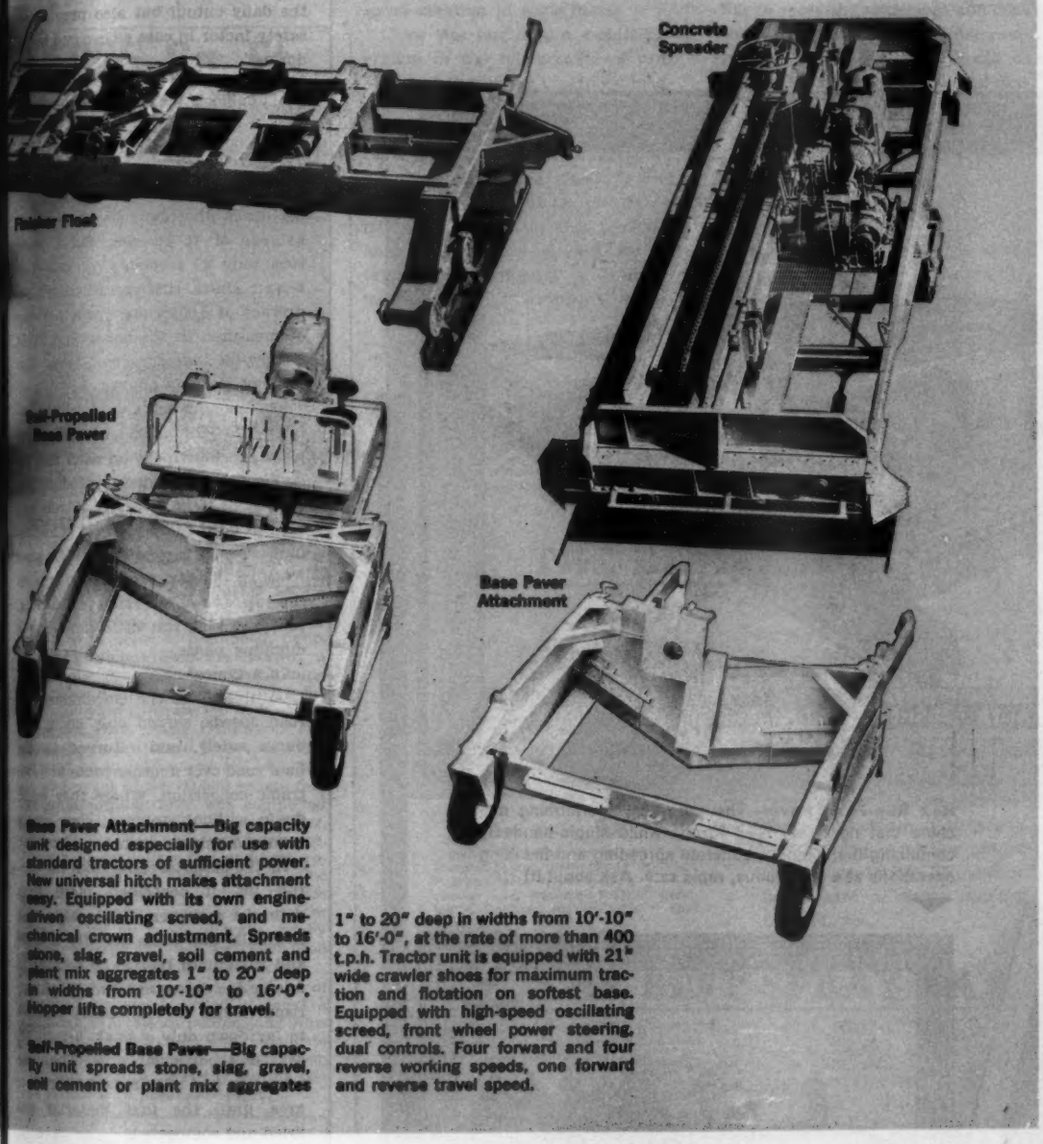
To move the borrow material, Clyde leased a fleet of nine new Challenge-Cook Earthking truck-trailer units. The big bottom-dump trailers, rated at 40 tons capacity, were pulled by truck-tractors powered by Cummins 262 tilt engines. The rigs, with plenty of power to get the heavy loads out of the borrow pit, had high speed on the road, as well as dumping characteristics that practically eliminated the need for help on the dumping phase.

At the start of the operation, the contractor loaded all of the rigs with a Kolman 48-inch conveyor-loader. But because of the large size of the pit area, as many as four dozers were required to feed the loader. In addition, there was lost time when the

(*Continued on next page*)



As material is dumped and bladed to 9-inch uniform lifts, a Tampo 50-ton roller pulled by a LeTourneau C Roadster tractor handles compaction. The rig, aided by heavy trucks traveling over the embankments, easily obtained the 95 per cent required density on the fill embankments.



Base Paver Attachment—Big capacity unit designed especially for use with standard tractors of sufficient power. New universal hitch makes attachment easy. Equipped with its own engine-driven oscillating screed, and mechanical crown adjustment. Spreads stone, slag, gravel, soil cement and plant mix aggregates 1" to 20" deep in widths from 10'-10" to 16'-0". Hopper lifts completely for travel.

Self-Propelled Base Paver—Big capacity unit spreads stone, slag, gravel, soil cement or plant mix aggregates 1" to 20" deep in widths from 10'-10" to 16'-0", at the rate of more than 400 t.p.h. Tractor unit is equipped with 21" wide crawler shoes for maximum traction and flotation on softest base. Equipped with high-speed oscillating screed, front wheel power steering, dual controls. Four forward and four reverse working speeds, one forward and reverse travel speed.

VERSATILE, RUGGED THAN EVER BEFORE!

BLAW-KNOX
Construction Equipment

For more facts, use Request Card at page 18 and circle No. 279

(Continued from preceding page)

Used as an auxiliary loader at the pit is a Kolman 48-inch unit fed by an International TD-24. It is used when more trucks are available than the Jebco can load; there is no waiting line of trucks at the elevating grader.

conveyor had to be moved and reset.

To speed up the loading and cut down on equipment, Clyde brought in a Jebco elevating grader mounted on a LeTourneau-Westinghouse Adams 660 motor grader. This rig, with the aid of a D8 push tractor, loaded the trucks rapidly.

The combination of the two rigs proved to be an ideal arrangement. The elevating grader was kept in continuous operation, loading as many trucks as it could handle. Whenever there was more than one truck waiting behind the grader, the extra trucks were diverted to the Kolman loader, where one workman with an International TD-24 tractor-dozer loaded them without delay. The two loading rigs not only increased the daily output but also provided a safety factor in case either one broke down.

Building the embankments

The Jebco elevating grader took a cut 2 feet deep and 14 to 18 inches wide, loading the 25-cubic-yard heaping loads (borrow measure) in an average of 75 seconds. Some loads took only 60 seconds. Working two 8-hour shifts, this spread moved an average of 6,000 cubic yards per day as measured in the borrow pit. This borrow-pit measurement was the basis of the pay quantity.

The embankments were built in 9-inch lifts with a 95 per cent compaction requirement on each lift. By laying out the sequence of dumping operations very carefully, Clyde was able to keep the big trucks dumping under optimum conditions. With good footing, an opportunity to dump on the run, and ample room for turning, the Earthking lost little time on the dumping phase.

In a typical operation, the big rigs sped directly to the embankment at road speeds, slowed only enough to dump safely, and returned to the haul road over another route to avoid traffic congestion. Where they could dump without stopping, they rarely needed a helping push.

As the material came from the borrow pit, it contained more than optimum moisture. This meant that it usually had to lie and dry a while and sometimes had to be aerated to release the excess moisture. With this requirement, it was usually possible to lay down only a single 9-inch lift over any particular area. Then the operation had to be moved to another area until the first material was dried and compacted.

A Michigan 380 dozer handled most of the leveling and shaping operations on the fill with occasional help from a D8. The versatile Michigan was also called on for a multitude of miscellaneous tasks, which sometimes included a quick run down to the borrow pit to give a lift.

A Tampo 50-ton rubber-tire compactor pulled by a LeTourneau C Roadster tractor handled all of the compaction—added, of course, by the continuous traffic of the heavy Earthking trucks and other equip-

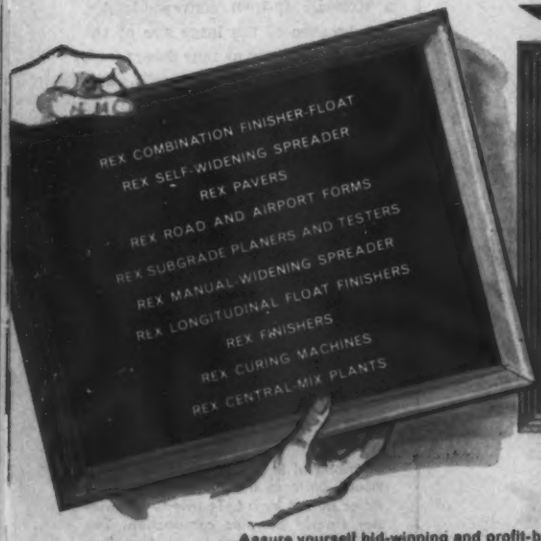
◀ For more facts, use Request Card at page 18 and circle No. 280

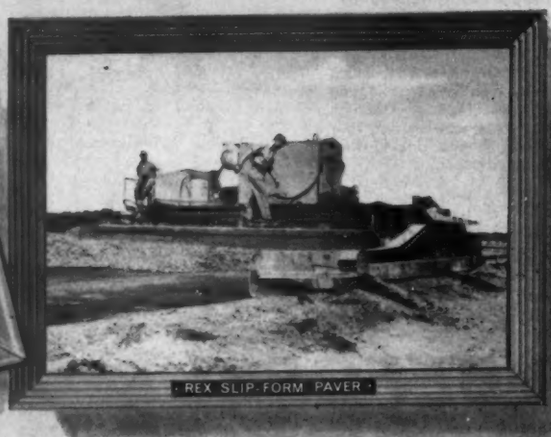
NEW Profit Winners

•NEW REX SPREADER-FINISHER-FLOAT MACHINE•

Now, for the first time on forms—the complete paving operation performed by a *single* machine in a *single* pass with a *single* operator.

Rex Slip-Form Paver—The remarkable performing machine that needs no road forms—while single-handedly combining the complete concrete spreading and finishing operations at a continuous, rapid rate. Ask about it!





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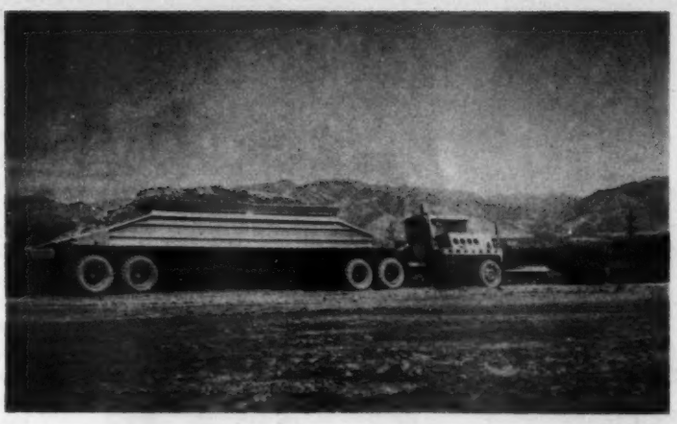
REX®
CONSTRUCTION MACHINERY



Earthkings almost always dump on the run without assistance and head back to the borrow pit without making a stop. The haul averaged more than 4½ miles, and the 9 Earthking rigs on the job hauled an average of 6,000 yards per double-shift day.

ment. A D8 pulled a McCormick-Deering disk to scarify the surface of the lifts for bonding with succeeding layers. The disk was also used to speed aeration in some cases.

Clyde was forced to a 1-shift operation in the fall because of provisions that required controlled loading on the high fills: 2 feet of embankment per week after fills had reached 10 feet above natural ground; and 1 foot per week after fills had reached a height of 16 feet above natural ground. This fact, and the longer drying period required to bring borrow material to optimum moisture made it impossible to operate two shifts and maintain a continuous flow of operations.

A surcharge of borrow material will be placed on some of the high fills to speed the settlement and consolidation of the underlying materials. This excess material will be removed later. Contracts for the construction of the structure in this 3-level interchange and for the highway paving will be awarded at a later date.

Personnel

Project manager Harry S. Clyde supervised the operation for W. W. Clyde & Co., with the assistance of general foreman Ruel Jansen and Grant Haslam.

J. F. Vallindingham served as resident engineer for the Utah State Road Commission. Jerry Fitch was party chief. John B. Skewes is chief construction engineer for the commission, and C. Taylor Burton is director of highways. THE END

Massey-Ferguson appoints

■ Cornelius Whetstone has been appointed general industrial planning manager, North American operations, by Massey-Ferguson Industrial Division, Wichita, Kans. His headquarters will remain at Toronto, Ont., Canada, where he formerly served as industrial co-ordinator, marketing department, North American operations.

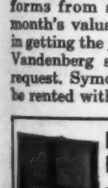
5625 Sq. Ft.

Speed in Forming Symons Steel-Ply Forms ... Keys Rocket Progress at Vandenberg Air Force Base

By discarding traditional forming methods in favor of prefabbed, lightweight, Symons Steel-Ply Forms, a heads-up piece of construction planning has reduced time and cost estimates for a 25,000-yard concrete job at Vandenberg Air Force Base, California. The average small 10-man carpenter gang erected up to *5625 square feet in a day.*

96 percent of the 80,000 square feet of total forming area was completed with Symons Steel-Ply Forms, fillers, corner pieces and necessary hardware. About 20,000 square feet of forms, reused, formed the total surface. The forms were used successfully for haunch building, forming suspended floor slabs and beams, all types of walls, heavy mass concrete, and they were even used on one side of the flame-bucket pour.

Advance detailing and shipment of forms from stock saved at least a month's valuable carpenter-gang time in getting the job under way. Complete Vandenberg story will be sent upon request. Symons Steel-Ply Forms can be rented with purchase option.



NEW Extension Angle

12" long with detail on each end for connection to Symons Steel-Ply Panels and Fillers. Designed for ¾" plywood facing.

COMPLETE INFORMATION AVAILABLE ON REQUEST

Symons

SYMONS CLAMP & MFG. CO.

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Warehouses Thruout the U.S.A.

MORE SAVINGS FROM SYMONS

For more facts, circle No. 281

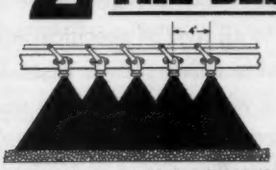
2 features you can't afford to be without...

1 THE BEST PUMP

Capacity 400 gallons per minute • Patented staggered "herringbone" impellers • 9 gear-teeth • Self-draining • 4-1/2" suction . . . 4" discharge • Quiet operating • Only two moving parts • Easy servicing.

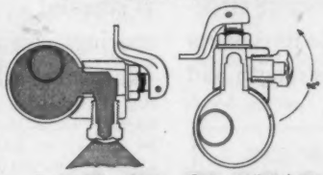
Etnyre FX-500 is the *only* distributor with a heat-jacketed pump. Engine exhaust is directed into jacketed pump case which surrounds pump impellers, then into intake valve above pump after passing through ducts in pump case. Suction on top and discharge at bottom make pump self-draining — no low points to trap material. Eliminates fire hazard of flame heating from burner.

2 THE BEST SPRAY BAR



Triple lap material coverage. With nozzles on 4" centers, spray from each nozzle overlaps two other sprays.

New lighter weight bar has full material circulation with 92° rotation up from spraying position. Complete valve drainage . . . NO possible drip! Pressure circulation assures instant and complete shutoff . . . clean starts and stops. Uniform spray from one end of the bar to the other.



Cross section shows new TUC Bar with valve and nozzle in spraying position.

Cross section shows bar rotated 92°— valve completely drained.

Notice that no part of valve extends into bar to reduce circulation.

E. D. ETNYRE & CO., OREGON, ILL.

ETNYRE

BITUMINOUS DISTRIBUTORS

For more facts, use Request Card at page 18 and circle No. 282

Adulterate!

Never!

Adulterate: To make impure by admixture of other or baser ingredients; corrupt.

Our Sta 'N Play gal and her roommates don't believe in it.

Sta-Crete ships an unadulterated Epoxy formulation to meet your job requirements—from a playground for Sherman tanks to a playground for Playboys.

Of course, we're partial to Architects, Engineers and Contractors who are all part-time Playboys.

Let's start dating now— My Sta 'N Play Datebook is reserved for you.

STA-CRETE Inc.,
115 New Montgomery,
San Francisco 5, California

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State_____

Position_____

Company_____

Phone_____

Dealer Inquiries Invited.

For more facts, use coupon or circle No. 283

For more facts on insert, use coupon or Request Card at page 18 and circle No. 285

IN AN ERODED AREA along the Arkansas River, this shovel spreads some 500 tons of riprap daily. The U. S. Corps of Engineers contract calls for digging ditch 38 feet deep and 112 feet wide at the top, installing well points to lower the river level another 10 feet, spreading of rock base 10 feet deep and 18 feet high, and placement of bank protection. The International Drott TD-15 Skid-Shovel is owned by the Mississippi Valley Engineering & Construction Co. of Memphis, Tenn.

New HRB bulletins

■ The Highway Research Board, 2101 Constitution Ave. N.W., Washington, D. C., has released two new bulletins.

"Electronic Surveying," Bulletin 256, contains papers telling of the experiences of several highway departments and of the U. S. Coast and Geodetic Survey in using electronic instruments for surveys. Specific subject areas covered in the papers are reliability of electronic measuring equipment, use of the telluriometer for highway survey control and highway horizontal control, and telluriometer use in control surveys for mapping by photogrammetric methods.

"Urban Research," Bulletin 253, contains papers that explore urban growth, its effect on future traffic, and how it can be controlled so that traffic problems will be minimized. Papers discuss research needs in the behavioral sciences relative to highway planning, open-space control, transportation plans in Washington, D. C., and zoning and traffic congestion.

Both bulletins are available from the board at 80 cents per copy.

Worthington news

■ William H. Wheeler has been made general sales manager of the recently enlarged Construction Equipment Division of Worthington Corp., Harrison, N. J.

The division, located in Holyoke, Mass., will be responsible for the sale of products formerly handled by the resale sales department, Marketing Division, Harrison, N. J., including portable compressors, contractors' air tools, mobile drilling rigs, concrete mixers, and highway pavers. The direct sales of construction-equipment products to the government will continue to be handled by the Marketing Division.

Hyster appoints several district representatives

■ The Hyster Co., Portland, Ore., has reassigned three district representatives in its international division. Fred W. Burdell, previously district representative for northern South America, will cover the Far East from headquarters in Singapore.

Russell L. Quesada is the new representative for northern South America. He was formerly in charge of industrial sales for a Hyster International Division dealer in Havana.

Peter K. Bourbeau has been appointed district representative for South and West Africa, and will reside in Johannesburg, South Africa.

Dar Johnson, Sr., has been appointed director of personnel. He has been manager of organization development for the firm since 1957.

As part of its expansion program, Hyster recently completed an addition to its manufacturing and office facilities in Danville, Ill., and a new home for its San Francisco retail branch.

Sinews of steel
to strengthen concrete construction

Clinton Welded Wire Fabric

For years, CF&I has worked closely with the construction industry, developing strong welded steel mesh for reinforcing purposes. The result: CF&I-Clinton Welded Wire Fabric.

This rugged mesh gives concrete structures—from bridges and roads to culverts and skyscrapers—maximum strength and durability. Its dependability stems from the high quality of the steel wire used.

CF&I-Clinton Welded Wire Fabric is manufactured to all ASTM specifications and is furnished in either rolls or mats. It is supplied in a wide range of gages and spacings. For complete information, call our nearest sales office.

CLINTON
WELDED WIRE FABRIC
THE COLORADO FUEL AND IRON CORPORATION

In the West: THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Farmington (N.M.) Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco San Leandro • Seattle • Spokane • Wichita

In the East: WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia

CF&I OFFICE IN CANADA: Montreal CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg 7320A

For more facts, use Request Card at page 18 and circle No. 284

I-H releases film on Glen Canyon Dam

■ International Harvester Co., Chicago, Ill., has released "Bridge to the Future," its second film on the building of the $108 million Glen Canyon Dam in northern Arizona.

The 30-minute 16-mm motion picture describes the intermediate phase of the Bureau of Reclamation project, covering the construction of two giant diversion tunnels—41 feet in diameter and pentrating more than a half-mile through rock—built to allow excavation of the river bed and concrete placement for foundations; keyways to anchor the dam on both sides of the canyon; spillway tunnels to control floodwaters and carry excess water around the dam; and a two-mile vehicular access tunnel from the summit to the canyon floor. Merritt-Chapman & Scott, New York, N. Y., holds the prime contract for the project, to be completed in 1964.

The film may be obtained on loan from Consumer Relations Department, International Harvester Co., 180 N. Michigan Ave., Chicago, Ill., or through local I-H construction machinery distributors.

NEMA section names

■ New chairman of the arc-welding section of the National Electrical Manufacturers Association, New York, N. Y., is L. D. T. Berg, manager of the equipment-marketing department of Air Reduction Sales Co., New York, N. Y.

Marvin G. Sedam, executive vice president, Alloy Rods Co., York, Pa., is Berg's successor as vice chairman of the section.

Also elected were R. C. Lipps, manager, West-Ing-Arc Department, Westinghouse Electric Corp., Buffalo, N. Y., as the section's representative on the board of directors of the NEMA industrial-equipment division; and A. J. Smith, vice president, electrode division, The McKay Co., Pittsburgh, Pa., as alternate to Lipps.

Special-products manager named by Clinton Engines

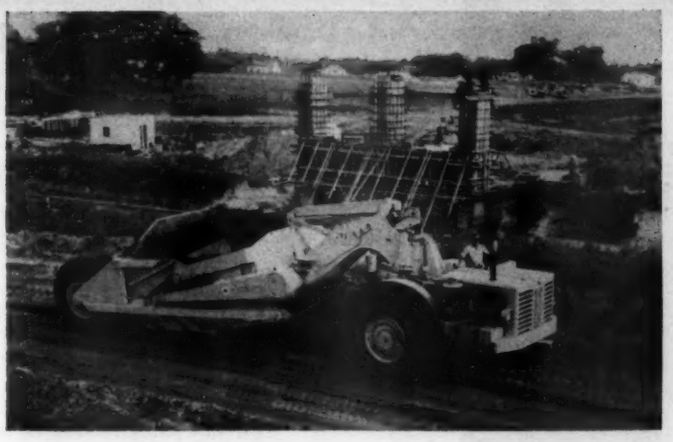
■ Clinton Engines Corp., Clinton, Mich., has appointed Lt. Col. Joseph E. Stermer, (U. S. Army, Ret.), manager of its special-products division. He will be responsible for marketing new products developed by the company.

Col. Stermer had formerly served as special assistant to the commanding general of the Ordnance Tank-Automotive command in Detroit.

Simplex Forms promotes

■ Ed G. Jara has been named general sales manager of all divisions of Simplex Forms System, Inc., Rockford, Ill.

Jara has been with Simplex since July, when the company purchased the manufacturing and distribution rights of the Waco Forms Division of the Waco-Porter Co., Chicago. He was sales manager of that firm for two years.

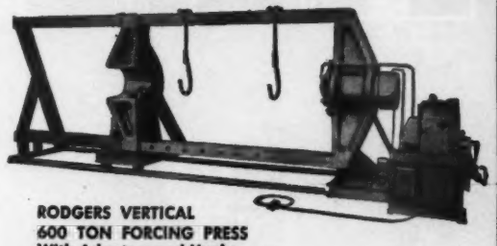


HAULING FILL from the borrow pit on a 7-mile prime contract for Interstate I-95 in North Carolina is an International Model 295 Payscraper. The rig, owned by the contractor, C. C. Mangum, Inc., Raleigh, is averaging a 1,200-foot haul from pit to fill, and is transporting 2,200 cubic yards every 11 hours. An estimated 1,400,000 cubic yards of earth is scheduled to be moved by August.

THE MOST FOR YOUR MONEY!...

Rodgers Forcing Presses

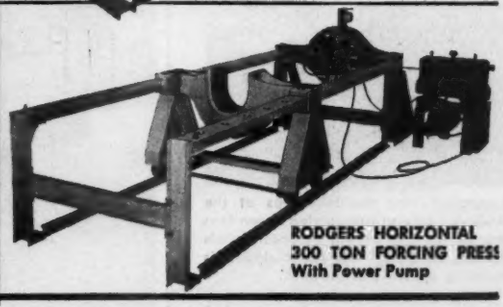
Greater Versatility — Rugged Power — Flexible Controls



RODGERS VERTICAL
600 TON FORCING PRESS
With Adaptors and Hooks

RODGERS INCLINED
400 TON FORCING PRESS
With Power Pump

RODGERS PORTABLE
100 TON FORCING PRESS
With Hand Pump



RODGERS HORIZONTAL
300 TON FORCING PRESS
With Power Pump

When you buy a Rodgers Forcing Press, you are not tying up your money in a single purpose tool. Compared with other presses, Rodgers design permits a wider variety of jobs to be handled—from the full tonnage capacity of the press, on heavy duty work, to partial capacities required for light jobs.

Rodgers Press design also offers unique flexibility in the interchangeability of cylinders and power source. Each press can be easily modified to suit changing job requirements. And an "extra" feature is the simple way the cylinder and pump may be detached for jacking, pulling and pressing work in the shop or field. Rodgers positive, accurate controls may be used at the press or remote.

When you check Rodgers Forcing Presses, feature for feature, their rugged construction, fast, positive action, and the variety of adaptors, hooks and other accessories available, you will be convinced that a Rodgers will give you the *most* for your money.

Rodgers Forcing Presses are available in standard, horizontal, vertical, inclined and portable models... capacities from 100 to 600 tons... with power or hand pumps.

Write for Catalog No. 315A... it gives complete details and specifications.

RODGERS HYDRAULIC, Inc.

Pioneers in High Pressure Hydraulics Since 1932

7415 Walker Street • Minneapolis 16, Minnesota

For more facts, use Request Card at page 18 and circle No. 286

Trencher takes a

Rough going up a steep Wyoming mountainside from a water reservoir to an Air Force radar station is the rule for crews working on a 3-inch line to supply the station with water. The 6½-foot-deep trench is being dug by a Buckeye wheel trencher. A small blast is being detonated, background, to break out a section of rock outcropping.

Contractors and Engineers staff article

High on a mountaintop near Sundance, Wyo., an Air Force radar station scans the skies; the precious water that supplies the installation, however, comes from springs in a steep ravine nearly 1,000 feet below. The water is pumped through more than two miles of 3-inch pipe that runs up the mountainside. Purvis Construction Co., Yardley, Wash., built the station for the Omaha District of the U. S. Army Corps of Engineers, and one of its crews handled work on the pipeline.

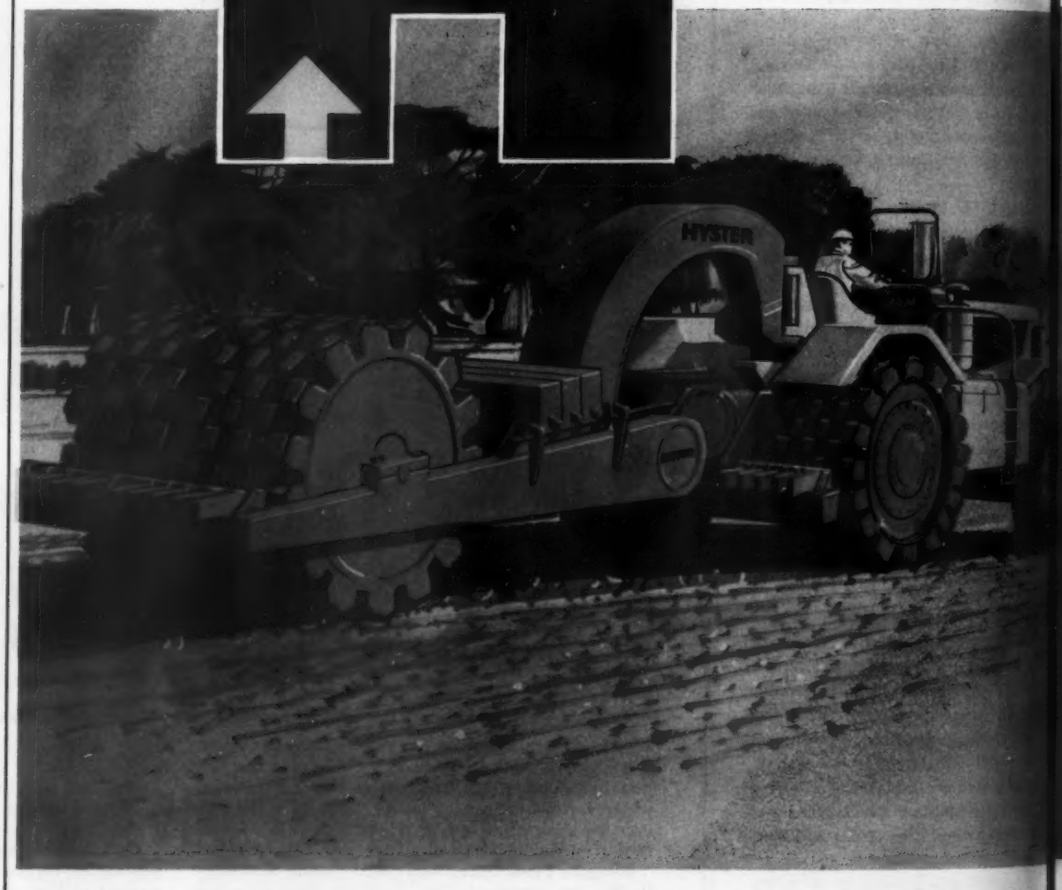
This old Buckeye wheel trencher shows there's plenty of life in the rig yet. It handles excavation under the toughest conditions, going up steep grades and chewing all but the hardest rock.

Foundations for the structures at the Sundance station are carried down into rock at the top of the mountain. This Cat D9, equipped with Ateco ripper, is breaking up some of the rock.

An American Econmobile Model 620 places backfill behind the foundation walls of one of the station structures.

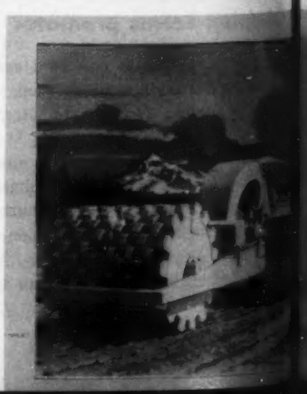
HYSTER

NEW



HYSTER C400B COMPACTER—CAT 630A TRACTOR
...the team that can cut your compaction costs to 3¢ per yard—or lower.

What a combination! Increased in size and speed, new Hyster Model C400B gives you compaction costs lower than ever before. Matched with the power and speed of the Cat 630A Tractor, this machine keeps spreading and compaction in balance. Why limit job production to the snail-like pace of an outmoded roller. Get the advantages of rolling 10' 10" per pass at speeds up to 15 mph. Get as high as 2,000 cubic yards in-place per hour. Get a Hyster C400B Compacter!



Cat and Caterpillar are registered trademarks of Caterpillar Tractor Co.

For more facts, use Request Card at page 18 and circle No. 287

...ut toughest rock

in digging trench for water line that rises 1,000 feet in two miles of mountainside

Initial plans called for water to be supplied from a small spring about one mile west of the site. When this proved inadequate, another source of surface water was used. A number of springs on the mountainside feed into two small streams that meet at a point some two miles down from the station site. At this point, the combined minimum flows were considered adequate to supply the needs of the station.

A small impounding reservoir and a pumping station were constructed at the confluence of the streams. The pipeline was built back up the mountainside to the station. And a power line was brought down from the station to supply power for the pump.

Veteran trencher does digging

The work horse of the pipeline outfit was an ancient Buckeye wheel trencher. Though it looked as if it had been borrowed from an old vehicle museum, the veteran trencher lost no time in proving its ability to dig the 6½-foot-deep trench up the steep grades through everything but the hardest rock. The 6½-foot depth was required to provide frost protection for the line.

Some drilling, blasting

While many of the hillsides in this area are barren of trees, the ravine in which this line was built had an abundant cover of brush and timber nourished by the water from the springs. This meant that the alignment first had to be cleared. Then tractor-dozers roughed out a grade for the trenching equipment.

Although the Buckeye trencher dug most of the ditch, a few sections had to be drilled and blasted. These were then excavated by a Link-Belt Speeder backhoe. A Fordson diesel wheel tractor fitted with a Sherman hydraulic hoe and a Wagner front shovel helped with cleanup in the trench and along the right-of-way.

The 3-inch galvanized steel pipe was coated on the outside with a primer and two coats of coal-tar enamel. It was laid in a bed of sand in the bottom of the 6½-foot trench.

Access road

An access road from the top of the mountain to the pumping station winds down through the ravine, taking a longer but less steep alignment than the pipeline. This road was improved only enough to insure year-around access to the pumping station by Jeep or pickup for checking and maintenance.

Modifications raise cost

The revision of the plans for the water system resulted in the relocation of the water-storage tank and other changes that upset the original work schedule. These changes upped the cost of the contract from the bid price of $1,694,781 to something closer to $3 million.

One of the first operations involved removal of a forest lookout tower and station from the radar-station site and its relocation on a nearby mountain. When this had been done, the contractor excavated for the concrete footings using Caterpillar D8 and D9 tractor-dozers equipped with Ateco rippers.

The headquarters and cantonment area of the station is located some five miles down the mountain on the road to Sundance. At this site, B. H. Baker, General Contractors, Inc., Colorado Springs, Colo., is building the complete base facilities for the housing of the station garrison and the general headquarters buildings.

Personnel

Supervising the job for Purvis Construction Co. was superintendent R. E. Stevens. The project engineer for the Omaha District of the Corps of Engineers on all of the contracts at the station is R. W. Bender.

THE END

A Fordson Major diesel equipped with Sherman hydraulic hoe and Wagner front bucket proves useful in cleaning out portions of the trench and in keeping the right-of-way clear for other equipment to use.

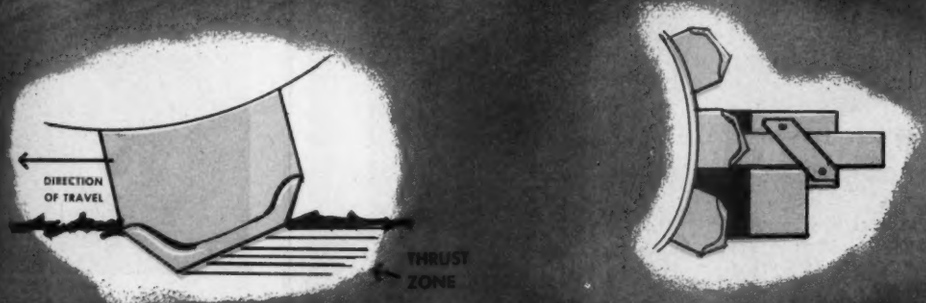
...EW HYSTER C400B COMPACTER

...Gives You the Competitive Edge

EXCLUSIVE HYSTER FEATURES MAKE THE DIFFERENCE

ROLLING SPEEDS UP TO 15 MILES PER HOUR

Key to high speed rolling is exclusive design of tamping rollers—large contact area of tamping feet permits fast walk out, high speed rotation even in plastic soils.



MAXIMUM TRACTION

Tamping feet sloped at an angle of 15° provide higher traction than flat pads—they thrust against partially compacted soil—do not rely on friction alone. A Hyster exclusive feature.

REVERSIBLE CLEANER BARS HAVE DOUBLE SERVICE LIFE

Alloy steel cleaner bars are individually replaceable and reversible. Easily switched end-for-end, bars give efficient cleaning action.

COMPANION MODEL TO THE PERFORMANCE PROVED DW20A COMPACTER

The new C400B Compacter is designed to match the new Caterpillar 630A Tractor. The Hyster DW20A Compacter is also available for the Caterpillar DW20 tractor.

YOU WANT A COMPACTER THAT PAYS ITS WAY

HYSTER has it!

Hyster high-speed compaction rollers have cut compaction costs to 3¢ a yard or less on jobs all around the country—the kind of performance you need on today's high volume, high-production contracts. Ask your Caterpillar-Hyster dealer for complete job data, machine specifications.

HYSTER COMPANY TRACTOR EQUIPMENT DIVISION P. O. Box 328 • Peoria, Illinois

TRACTOR EQUIPMENT DIVISION - Construction and logging equipment
INDUSTRIAL TRUCK DIVISION - Lift trucks, mobile cranes, straddle carriers
MARTIN TRAILER DIVISION - Heavy machinery hauling trailers
INTERNATIONAL DIVISION - Overseas manufacturing, sales and service

Manufactured in: Portland, Oregon (Home Office) • Danville, Ill. • Peoria, Ill. • Kewanee, Ill. Australia • Brazil • England • France • The Netherlands • Scotland • Union of South Africa

Since traffic had to be detoured from a section of roadway during work on 3½ miles of Cross Westchester Expressway just outside New York City, the unused pavement provides a good equipment park, plus a site for fuel facilities and a steel building that serves as a repair shop. Good maintenance was one of the reasons why the contractor finished work 8 months ahead of time.

No time for down time on expressway project

Contractors and Engineers staff article

Down time was no problem for Mount Vernon Contracting Corp., Mount Vernon, N. Y., on its 3½-mile section of the Cross Westchester Expressway in Westchester County, N. Y. An effective maintenance force on the job saw to it that the contractor got the most out of his equipment. On this project, Mount Vernon Contracting cut eight months off the completion date of the $10.6 million contract.

Part of the detour plan called for a rerouting of traffic from an existing section of 4-lane concrete pavement, and when the project got under way, the contractor used the existing roadway for his maintenance shop and yard. This provided a good equipment park with a hard surface.

At this site, a well equipped shop, housed in a Butler 40 × 60-foot steel building with a concrete floor, con-

Inside the repair shop, mechanics work on a Cat D8 final-drive unit. Below is a section of the shop with storage bins that make it easy to find parts. Since dealers were located nearby, parts storage was held to a minimum.

for single material batchers . . .

JOHNSON BATCH CONTROLLER MEMORIZES 120 DIFFERENT MIXES

DUPLICATES EACH AND EVERY ONE FAST, ACCURATELY

No matter how rigid specifications are, there's an easy way to meet them. The way: Johnson Batch Controller-Recorder. You can preset 120 mix selections. One button charges all batchers, another discharges them. All material is weighed simultaneously, accurately. Controls work independently but are fully interlocked. Graphic pen recorder charts each material separately on one strip of plain paper . . . gives you complete batch record of plant operation. Automatic moisture compensation.

for multiple aggregate batchers . . .

MAKES 60 MIX SELECTIONS

Here's accurate control for sequence-weighing with multiple aggregate batcher, cement, and water batcher. Weighs out any one of 60 mixes at the touch of a button and flip of a switch. All timers, plug-in relays, are housed in a dust-tight cabinet. All materials are graphically recorded on one chart. Time, date, batch serial number are all stamped on the chart for a permanent record of plant operation.

See your distributor or write for Johnson Batch Controller Booklet

C.S. JOHNSON CO.

CHAMPAIGN, ILL. • STOCKTON, CALIF.

A Division of KOEHRING Company

J108

For more facts, use Request Card at page 18 and circle No. 288

One of the field mechanics on the Cross Westchester Expressway project works on the blade of a D8 with a Hobart welder mounted on a truck, right. The master mechanic covers the job in an International pickup that has a loudspeaker on the cab.

A serviceman from U. S. Tire Supply Corp., the Bronx, New York City, changes a tire on a Euclid.

The lube crew makes a circuit of the job with a Lincoln Lubrovan. These men keep complete records of lubrication, fuel consumption, and equipment repairs on daily work sheets on which each piece of equipment is entered.

tained the master mechanic's office, parts and tool crib, and three equipment stalls—one of them a drive-through. Nut and bolt bins lined one wall, and a rack for bar stock, strap, angles, and steel plate was built inside.

A master mechanic, four mechanics, two welders, and a records and parts man made up the maintenance team. The crew, with lubrication and fuel units, handled servicing for the entire spread. Equipment used for the 1,300,000 cubic yards of excavation included two P&H 1055 and four Northwest 80-D shovels, 27 rear-dump Euclids, 15 Mack dump trucks, six Cat D9 and three Cat D8 tractor-dozers, and an Austin-Western and a Cat grader. Rock drilling was handled with four Ingersoll-Rand and four Gardner-Denver drill rigs on tracks, plus numerous jackhammers. Air was supplied for this operation by 12 Ingersoll-Rand 600 compressors. Dust was controlled with seven Cummer dust collectors.

A Koehring Twinbatch paver led the train, which put down over 50,000 cubic yards of concrete pavement.

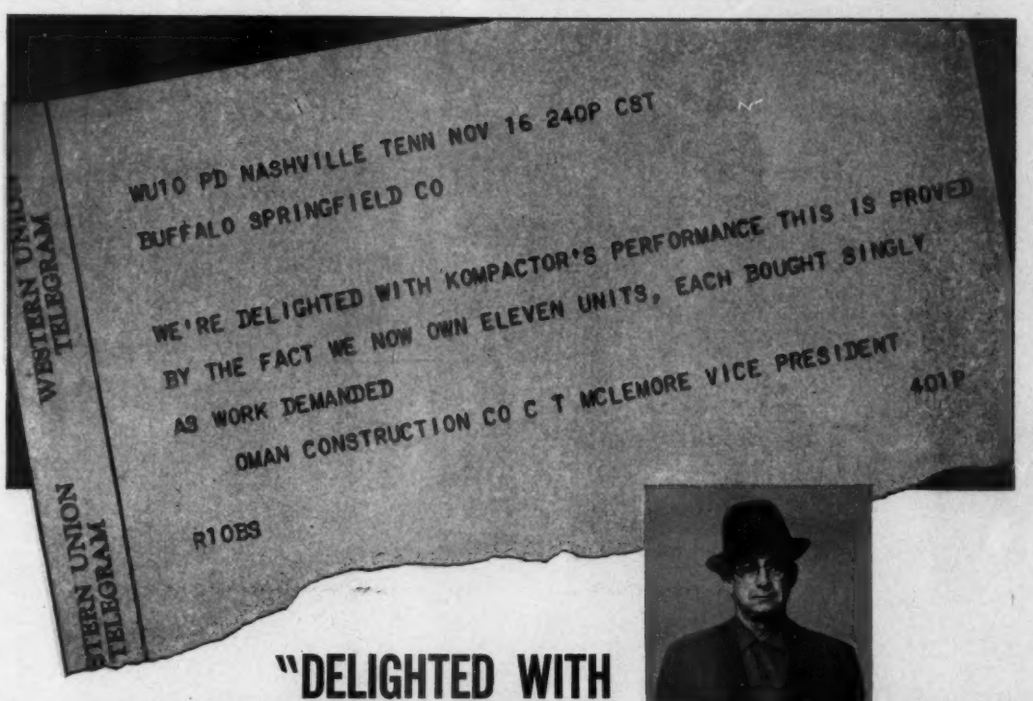
In general, the project was operated on a 5-day week and, except for the paving spread, worked an 8-hour day.

In the shop, a Yale 3-ton chain hoist was used by mechanics making change-overs. Two truck-mounted welding machines, Lincoln and Hobart, were available for field or shop use. An Aeroil space heater kept the building warm in the cold months.

Since the contract was located in the New York metropolitan area, and Mount Vernon has quick access to many equipment dealers and parts depots, the replacement-parts stock was held to a minimum. This meant important savings in parts inventory at the shop.

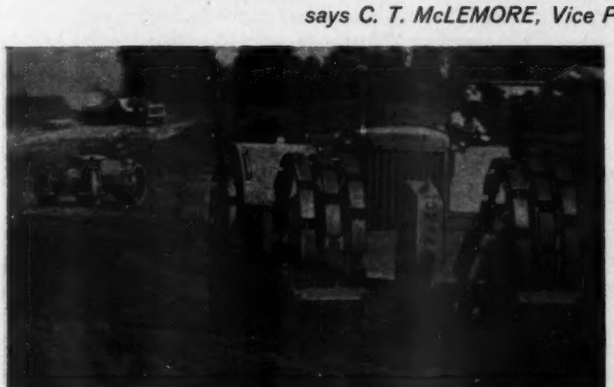
A card-index and chart system was used to keep complete records of all lubrication, fuel consumption, and equipment repairs. The lube crew received a daily work sheet from the master mechanic's office and checked off the various units as serviced. A Lincoln Lubrovan was used for this operation. Gulf and D-A lubrication products were standard throughout the project.

(*Continued on page 51*)


WU10 PD NASHVILLE TENN NOV 16 240P CST
BUFFALO SPRINGFIELD CO
WE'RE DELIGHTED WITH KOMPACTOR'S PERFORMANCE THIS IS PROVED
BY THE FACT WE NOW OWN ELEVEN UNITS, EACH BOUGHT SINGLY
AS WORK DEMANDED
OMAN CONSTRUCTION CO C T MCLEMORE VICE PRESIDENT
401P
R1OBS
WESTERN UNION TELEGRAM

"DELIGHTED WITH KOMPACTOR® PERFORMANCE . . . *OWN ELEVEN*"

says C. T. McLEMORE, Vice President, Oman Construction Co.



Many cost-conscious contractors, like Oman Construction Co. have found Kompactor the practical answer to meeting density requirements. It's self-propelled, operates on an interrupted pressure principle that delivers the compaction you need in less time and with fewer passes. You get more uniform density. There's no displacement of materials due to "bulldozing" ahead of the wheels. And with Kompactor, you can wheel in tight to culverts, walls, and abutments — eliminate a lot of costly hand tamping work. Cost of compaction with Kompactor: About two cents per yard. See your distributor.

Road-to-Basement — *Oman Kompactors on highway job, and compacting fill in building basement show extreme versatility of machine. Each pad segment exerts pressure of 580 lbs. per lineal inch for total length of pad.*

BUFFALO-SPRINGFIELD COMPANY
Springfield, Ohio

A Division of **KOEHRING** *Company*

B103

For more facts, use Request Card at page 18 and circle No. 289

PASTOR TRUCKING COMPANY, Baltimore, has just bought six more Autocars as a result of Autocar experience on the new Baltimore-to-Harrisburg Expressway. "Autocar—nothing less," says Mr. Impaciatore, president.

This job is Autocar size... don't think of less

For certain jobs you either have Autocars or wish you had. Nothing less answers.

Take building an expressway like Maryland's new Jones-Falls. There's a job that really tests a truck's character. Loads are terrific. Grades are steep and there's constant shifting. The mud can even be axle deep, but to the Autocar this is still a non-stop operation. Such performance is the direct result of the custom engineering and quality in which Autocar is unsurpassed.

When you have Autocar-size jobs, there's no substitute for the "World's Finest." It's profitable to have Autocars on road construction projects. Why be sorry you don't? WHITE-Autocar comprehensive service throughout the United States.

Autocar
"World's Finest"

Division of
The White Motor Company
Exton, Pa.

For more facts, use Request Card at page 18 and circle No. 290

(Continued from page 49)

Field service

A mechanic with a service truck was stationed at each important area in the field, and equipment operators had firm instructions to report immediately any real or suspected mechanical trouble. The maintenance spread used International and Chevrolet pickup trucks, each equipped with a Du Mont radio.

A spare Euclid and a Cat dozer or Michigan end-loader were available at each excavation spread in case of a flat tire or major equipment breakdown.

In case of serious delay for repair of loading equipment, a standby shovel, held at the repair yard, was able to crawl or be moved by trailer to the point where it was needed.

Tire service was handled by the U. S. Tire Supply Corp. of the Bronx, New York City. A GMC truck carrying a Brunner air compressor and a Star crane for handling big tires was assigned to the project.

The maintenance crews, operating with ample equipment, practically eliminated the need for night or Saturday maintenance work and at the same time managed to keep rigs on the line and producing so that the contractor was able to cut months off the schedule.

Fred Cardillo is in charge of all equipment, and Carmine "Bucky" Capalbo is the master mechanic for Mount Vernon Contracting Corp., which has Adam J. Petrillo as president. THE END

This maintenance crew using an International pickup equipped with a Du Mont radio ranges the field to service equipment. Here the men are handling some work on a truck crane.

Singmaster & Breyer receives award

■ Singmaster & Breyer, Inc., consulting engineering firm of New York City, has received a Certificate of Appreciation from the Bureau of Yards and Docks, U. S. Navy, for its work in preparing a feasibility study of a combined sea-water-conversion and power plant for the U. S. Naval Base at Guantanamo Bay, Cuba.

The proposed Guantanamo plant is similar in many ways to the Aruba sea-water-conversion and power plant for which Singmaster & Breyer did both the engineering and construction. The Aruba plant has a rated capacity of 2,700,000 gallons per day of fresh water, plus 13,000 kw of by-product electricity.

Koehring Division holds distributor conferences

■ Koehring Division of Koehring Co., Milwaukee, Wis., is holding sales-management conferences with principals of its distributor organization in seven key areas across the United States.

Conferences have already been held in Atlanta, New York, and Pittsburgh. Others will be held in Rockton, Ill.; Omaha, Nebr.; Dallas, Texas; and Salt Lake City, Utah.

Purpose of the meetings is to appraise Koehring's construction-equipment business and to map strategy for increasing sales in 1961.

ELLIS METHODS

ELLIS PRODUCTS USED ON THESE CONSTRUCTION JOBS

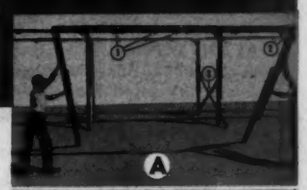
- U.S. Senate Office Building, Washington, D.C.
- House of Representatives, Washington, D.C.
- Smithsonian Institute, Wash. D.C.
- Olympic Stadium, Wash., D.C.
- Kaiser Building, Oakland, Calif.
- Morton Towers, Miami Beach, Fla.
- Firestone Office & Whse. Bldg., Nashville, Tennessee
- Southwestern Bell Tele. Addn., Dallas, Texas
- Chemistry Bldg., Univ. of Texas, Austin, Texas
- Public Health Building, Philadelphia, Pennsylvania
- Carnegie Institute of Technology, Philadelphia, Pennsylvania
- Municipal Auditorium, Pittsburgh, Pennsylvania

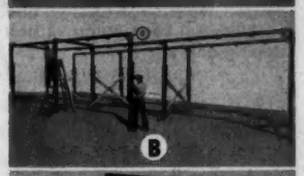
THE ELLIS SHORE

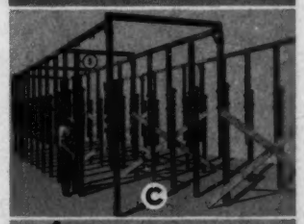
Shore Clamp
Jack
Head Clamp
Shore Holder
Purlin Splicer
Timber Splicer
Wall & Beam Brace
Beam-&-Column Clamp

Here is the quick, safe, adaptable, and economical way to shore

Photos at right—A: Purlin, with slip-in shore holders (#1) and head clamps (#2) attached, is joined with shores, raised, and braced (#3). B: Seat (#4) is left for next purlin end . . . assembly extended with more purlins and shores. C: One man can quickly put up the in-between slip-in shores (#5). Photo D shows another set-up with short purlin assemblies and a column form. Erection and dismantling is done with amazing speed!







LOW-COST Ellis Metal Products

. . . attached to wood members . . . either Ellis Sticks or your own dressed 4 x 4's provide all the parts you need for money-saving concrete forming.

BUY OR RENT ELLIS PARTS

Write for complete information. Send us plans on your next job and receive free suggestions for the best Ellis Methods to use.

Ellis MFG. CO. INCORPORATED
211 N. W. 4th St. OKLAHOMA CITY, OKLA.

Above: Movable Tower Sections

Bottom: Ellis Method For Forming Beams

For more facts, use Request Card at page 18 and circle No. 291

Alternate design cuts cost of parking garage

Prestressed-concrete girders and prestressed cast-in-place slabs are cost-cutting construction features of this new parking garage in Beverly Hills, Calif. The bid on the job was almost $186,000 less than the low bid submitted for conventional reinforced concrete. The Lin tees, which will be post-tensioned after slabs are cast, span 71 feet to a central shear wall. Corbels on the 65-foot columns provide seats for girders.

GREENVILLE RIPPER FOR IH TD-15, 20, 25

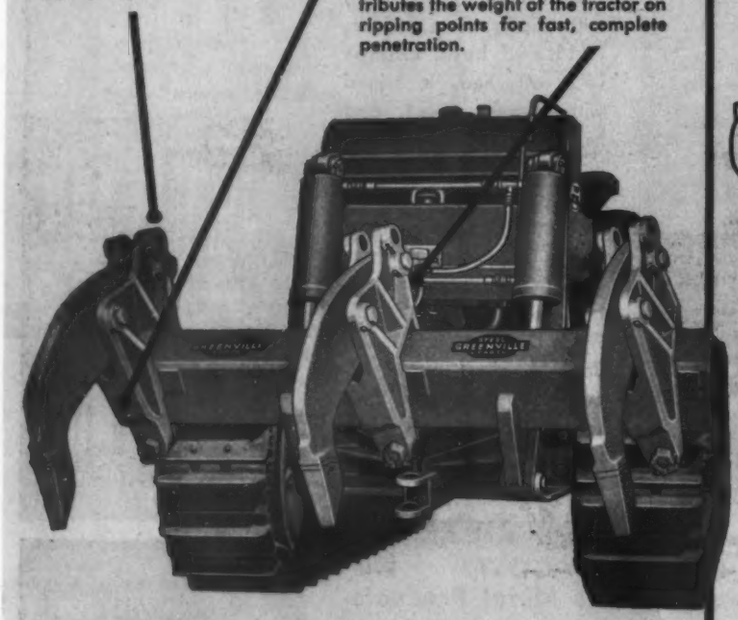
TURN TRACTOR INTO 4-WAY MACHINE

. . . rip . . . bulldoze . . . tow . . . pushload without changing tools

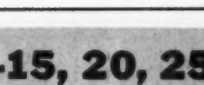
RIP AT ANY DEPTH . . . Pitch and depth control adjustments permit ripping at any depth. From basic settings, operator can adjust hydraulically as required. Settings can be made in seconds. Hydraulic system holds points at desired depth. Shank design and pitch control keep points at best ripping angle.

LIVE SWIVEL ACTION . . . Shanks smoothly swivel 15° in either direction on heavy pins — seek out weak spots in rock. It gives points a live action that shatters rock with a jackhammer action. Shanks follow tractor like a trailer.

FINGER-TIP HYDRAULIC CONTROL . . . Finger-tip control of the "power-matched" hydraulic system exerts Goliath-like power which distributes the weight of the tractor on ripping points for fast, complete penetration.



THE GREENVILLE TRAILING SWING BRACKETS work separately, each pivoting about a heavy pin to seek out weak spots in rock. The ripper weight balances dozer, resulting in greater traction and more usable horsepower.



BOOSTER RIPPING . . . A push block, straddling the center shank and swing beam can be attached very quickly by pinned connections. This permits use of the combined efforts of two tractors for added ripping power.

CURVED SHANKS are available in 24" maximum digging depth for TD-20 and 25. These shanks give their best performance in materials that are not blocky or slabby in formation.

STRAIGHT SHANKS are available in 24", 42" and 48" maximum digging lengths for TD-25 and all will adapt to the standard ripper without special attachments. Greenville's straight shanks give top performance in a wide range of materials. 18" penetration shanks are available for TD-15.

REPLACEABLE POINTS . . . For use with curved and straight shanks.

Tractor	Max. Ripping Depth W/Std. Shanks	Ground Clearance 24" Shank	Ground Clearance 18" Shank	Overall Width Tool Beam	Tool Beam Cross Sect.	Pump Data (Rear PTO)	Cyl. Dimensions Bore	Cyl. Dimensions Stroke	Plst. Rod Diam.
TD-25	24"	31"	—	108"	11" x 12⅝"	60 gpm @ 1000 psi	8"	15½"	3"
TD-20	24"	24"	—	102"	10" x 12"	44 gpm @ 1000 psi	6"	15"	2¼"
TD-15	18"	—	12"	90"	8" x 8"	37 gpm @ 1000 psi	5"	15"	2"

STEEL GREENVILLE CAR CO — EARTHMOVING EQUIPMENT

GREENVILLE STEEL CAR COMPANY

Greenville, Pennsylvania

For more facts, use Request Card at page 18 and circle No. 292

Contractors and Engineers staff article

Redesigning a parking structure to use prestressed-concrete members saved the city of Beverly Hills, Calif., nearly $186,000.

When bids on the conventional reinforced-concrete basis exceeded the $750,000 estimate by $150,000, the city decided to reject them and readvertised for new proposals based on the original or alternate designs.

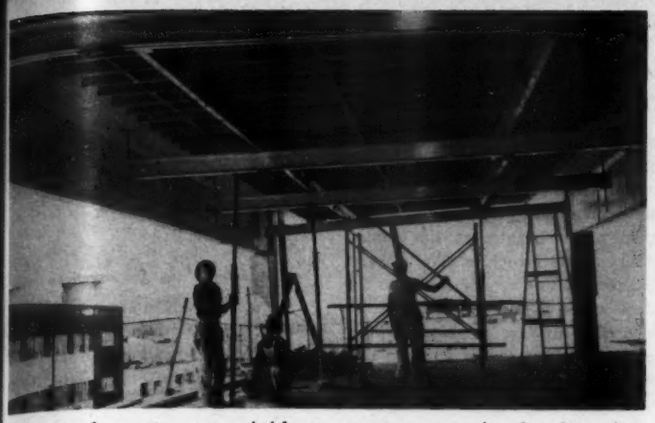
When the bids were received the second time, the low bid for the conventional reinforced-concrete design was $786,150. The low bid, $599,000, was made on the alternate design by a joint venture of C. L. Peck, contractor, Los Angeles, and the Ellis E. White Co., Beverly Hills. The long-span helical garage concept was by Ellis E. White, with structural engineering by T. Y. Lin & Associates, Van Nuys. It incorporates precast, prestressed tee girders on precast columns with a prestressed cast-in-place slab. By eliminating columns and improving the layout, the revision provides for the parking of the same number of cars (400) as the original design but it calls for one floor less.

The structure measures 150 feet square and consists of a continuous ramp going up the equivalent of six floors. The main girders are Lin tees, which nominally span 75 feet from the exterior columns to a central shear wall. The actual clear span is about 71 feet. The building has no interior columns and no exterior walls. The pairs of girders are tied through the central shear wall by two prestressing tendons each, which extend the complete length of the girders. They were post-tensioned from the outer ends after the floor slabs had been cast and cured.

The lightweight, continuous, concrete floor slab has a minimum thickness of 4½ inches and is reinforced with prestressing tendons running transversely to the direction of the girders. These Prescon tendons, which contain six ¼-inch high-tensile wires, are spaced at about 3-foot centers across the slab. The wires are treated with a mastic rust inhibitor and are encased in a paper wrapping.

Drilled caisson footings

At the location of each of the columns, a 3-foot caisson was drilled



This unique form system, suspended from precast tees, uses only a few shores that are virtually aids in jacking the form tightly up against the girders. The plywood is backed by 2 × 4's, on 16-inch centers, that rest on 2½ × 8-inch aluminum channel purlins set on double-channel wales.

Slab forms and screed supports are in place here, and prestressing strands have been laid across them in one direction. Half a floor was formed and cast at a time, generally on a Friday. On Mondays, tendons were stressed, and forms were stripped to be moved for resetting.

down about 23 feet to a sandy soil stratum, where it was belled out to a diameter of 7 feet. The caissons were filled with concrete, and four anchor bolts were set in the top of each to take the base plates of the precast-concrete columns.

The 24 columns for the structure measure 18 × 36 inches in section and are 65 feet long. Corbels on the sides provide seats for the girders. These columns were precast to full height by Wailes Precast Concrete Corp., Sun Valley (a Los Angeles suburb), and were trucked to the site and set by a truck crane. They have conventional reinforcing.

The central columns are really precast parts of the central shear wall. When these columns had been set, crews immediately began forming and casting the wall sections between them, tying the columns into a unit that resists the lateral forces in that direction. Openings in the wall in the outer bays provide the driveways for the continuous ramp.

Long prestressed tees

The 75-foot-long Lin tees were also precast by Wailes Precast Concrete Corp. The tees are 36 inches deep with an 8-inch web and 6-foot-wide flange that tapers from 3½ to 1½ inches in thickness.

The 10 straight 7/16-inch-diame-

(*Continued on next page*)

Two of the prestressing tendons from the tees extend up out of the top flange of tees at the center of the building. These tendons from abutting tees on opposite sides of the central shear wall are joined together to provide continuity. This connection is made before the slab is cast. Tendons are tensioned from outer ends after concrete has cured.

WANTED
KILLER *Clay* COMPACTION JOBS
For Vibratory Sheepsfoot Roller

Compaction Time Cut 75% On Earth Fill Dam

Facts don't lie . . . one pass by a Dynapac, four passes for competition to meet specs. Which equipment would you rather have on your job? We're after the killer jobs, the kind where your profits go down the drain due to soil compaction problems. We will run against *any* compaction equipment. Let the Dynapac CF-30 prove itself on your job. Call your nearest distributor.

DYNAPAC CF-30

PURPOSE OF TEST: Establish compaction specs for new earth fill dam.

AUTHORIZED BY: Municipal Water Co. — tests directed by prominent civil engineering firm.

EQUIPMENT: CF-30 vibratory sheepsfoot versus 5 x 5 sheepsfoot developing 1100 p.s.i.

LOCATION: Southern California

MATERIAL: Clay with 30% passing at 200 sieve.

RESULTS: 3 to 4 passes with vibratory sheepsfoot passed density test. 5 x 5 required 12 to 16 passes.

* Complete details available on request.

TEST DATA

VIBRO-PLUS DYNAPAC

41-25

VIBRO-PLUS PRODUCTS, Inc.
STANHOPE, NEW JERSEY

WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES.

For more facts, use Request Card at page 18 and circle No. 293

A lightweight and compact stressing jack is used to stress tendons at the outer ends of the girders. Notice the amount that the tendon at the left of the jack has been elongated. The one at the right of the jack is still to be stressed.

(*Continued from preceding page*)

ter 7-wire pretensioning strands in the webs are harped down in the center of the span and distributed across the section at the ends. In addition, each girder has a pair of post-tensioning cables that are draped down in the center and project out of the top flange at one end, which is at the center of the building. These cables from abutting tees are connected through the central wall and post-tensioned from the ends to provide continuity of the girders over the center support. Each of the Prescon cables contains 15 wires, each ¼ inch in diameter.

The 12-ton girders were trucked from Wailes' plant to the job site and set in place on the columns by a Link-Belt 45-ton truck crane using 80 feet of boom and a heavy strongback to spread the load.

Deck cast in place

A very unusual and efficient forming system was used for the deck slabs. The form was made up and handled in panels 12 feet wide and 45 feet long. This formed half of one bay between girders at a time. The ¾-inch plywood decking of the forms was coated with a protective plastic film that kept the material looking new even after many re-uses. The plywood decking was backed by 2 × 4's at 16-inch centers resting on two 2½ × 8-inch aluminum channel purlins. The purlins rested on cross members consisting of pairs of the same channels.

The cross members were suspended from the flanges of the concrete tee girders by ¾-inch threaded rods 3 feet long. These rods were inserted through holes in the flanges of the tees and were fitted with standard nuts and large plate washers to distribute the load. The lower ends of the rods projected between the pairs of channels of the cross members supporting the form. Workmen drew the form up tight against the underside of the flanges using an Ingersoll-Rand electric impact wrench to draw up the nut on the threaded rod. A few Safway adjustable steel shores—about 15 per panel—were inserted between the floor below and the form cross members to control the deflection.

Deck is post-tensioned

Forming and concrete placement were done for one-half of the building—an area of about 11,000 square feet—at one time. When the forms for half a floor were in place, the Prescon 6-wire tensioning tendons were strung out across the complete width of the building, spaced at an average of about 3 feet apart.

While the deck slabs have a minimum thickness of 4½ inches, they are considerably thicker at some points. The floors have a continuous slope to form the ramps, while the flanges of the tees are horizontal. This calls for more depth at one edge of the flange than the other.

Lightweight concrete for the slabs was made with Ridgelite aggregate supplied by Ridgelite Products Co. to the Beverly Building Materials Co., which mixed the concrete and delivered it to transit mixers.

The transit mixers discharged the low-slump concrete into eight Whiteman power buggies at the ground floor of the structure. The buggies carried the mix up the ramps to the floor where it was needed and traveled over runways to place the concrete. The floors were screeded and finished by hand to produce a skid-resistant surface.

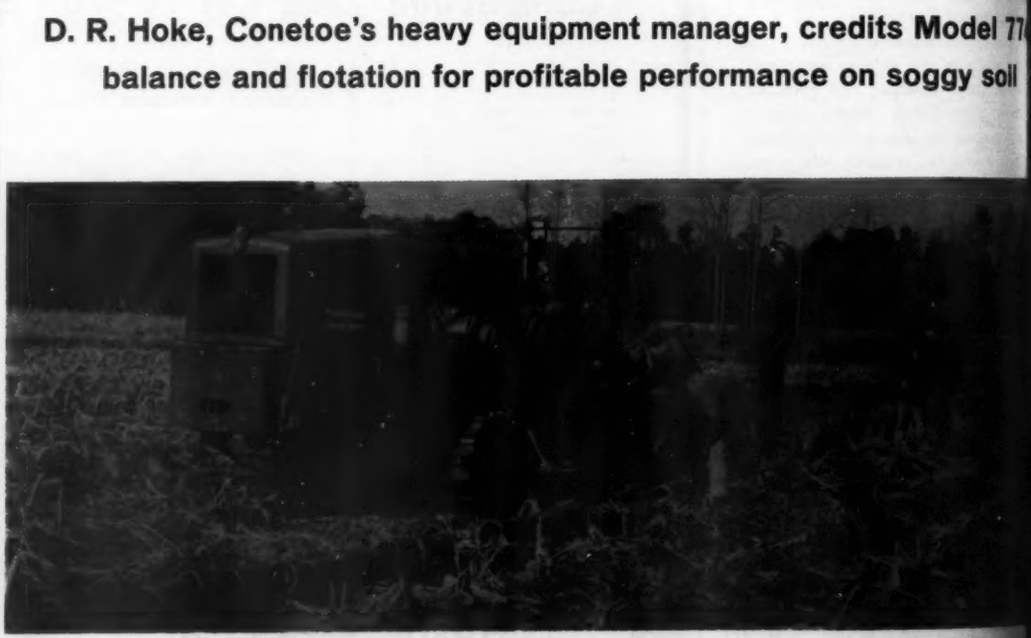
In the usual sequence of operations a section was cast on Friday and allowed to cure over the weekend. On Monday, the prestressing tendons in the slab were stressed and the forms stripped. During the week, the forms were reset, and electrical conduit and reinforcing were installed so that another half-floor was ready for concrete on Friday.

Move large form sections

The stripping and moving of the 45 × 12-foot form sections was handled speedily and easily. The contractor built up a timber scaffold to fit on a pickup truck. When a sec-

"OUR BARBER-GREENE LAYS TILE IN SOIL THAT BOGS DOWN OTHER DITCHERS

D. R. Hoke, Conetoe's heavy equipment manager, credits Model 77 balance and flotation for profitable performance on soggy soil



This Model 774, owned by Conetoe Supply Co., digs to 5½' depths. You get the same production bonus with a 774 equipped with a 7' wheel—and the price is 50% less than any other 7' wheel ditcher.

Model 772 (shown) is your best buy for general utility range—cutting widths from 10-24" and to 5'6" deep. Model 773 offers same exclusive features plus wider track gauge and pad widths for greatest flotation.

Manufacturer of the only modern ditcher line

Representatives in Principal Cities of the World

Barber-Greene

Main Office and Plant AURORA, ILLINOIS, U. S. A.
Other Plants: DeKalb, Milwaukee, Detroit, Canada, England, Brazil, Australia

CONVEYORS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT
CONTRACTORS AND ENGINEERS

tion was to be stripped, the shores were removed, and the truck and scaffold were driven in under the section. Crews unscrewed the nuts on the threaded rods, and the entire form section was lowered intact onto the truck. The truck was then driven to a new location, and the form was raised straight up into position.

The post-tensioning cables in the slab were stressed with hydraulic jacks as each half-floor was cast. As a complete floor was finished, the post-tensioning tendons that produce the continuity in the girders were stressed by being jacked from the outer ends of both girders. The Prescon post-tensioning system uses button-head wires and doughnut-shaped stressing washers.

While all of the cars travel the continuous ramp of the structure, there are two stair wells and a passenger elevator for access to the several levels.

Personnel

Supervising the project for the Peck-White joint venture was superintendent H. J. Schultz.

Russell Pyros served as inspector on the job for the city of Beverly Hills, and Raymond Itaya represented T. Y. Lin & Associates. Edward E. Tufte is director of public works for the city. Max Straus is head of the building department. THE END

Engineering Service names division head

Robert W. Meyer has been appointed head of the Hydraulic and Structure Division of Engineering Service Corp., Los Angeles, Calif.

A civil and mechanical engineer, Meyer has had over ten years' experience in hydraulic design and engineering on major municipal projects. He will supervise a staff of 15 civil engineers and assistants.

Two-volume work on prestressed concrete

■ "Prestressed Concrete," a two-volume work by Y. Guyon, has been published by John Wiley & Sons, New York, N. Y.

The purpose of the work is to illustrate some of the general principles involved in prestressing through detailed study of particular applications, and to illustrate some methods that can be suitably modified for other applications.

Volume I, 559 pages long, treats the basic phenomena of prestressed concrete as applied to statically determinate straight beams, and discusses in detail related problems such as deferred strain of steel, bond phenomena, and stresses in the end zones of beams.

Among the many subjects covered in the first volume are basic ideas, prestressing methods, Freyssinet multiple-wire cone anchorage, anchorage of wires using steel wedges, anchorage of bars by threaded ends and nuts, bulk prestressing by cables, materials used in prestressing, friction between cable and duct, fire resistance, anchorage by bond, tests on pretensioned beams, and factors of safety.

Volume II, 741 pages in length, deals with statically indeterminate prestressed-concrete structure systems. The first part of the book treats the "elastic" design of bridges, portals, frame structures, etc., with special emphasis on the theory of the concordant cable. In the second part, the author discusses ultimate load design and the theory of the plastic hinge. There is also a section on the structural behavior of prestressed slabs. Chapters deal with design calculations for continuous beams, analogies between cap cables and haunches, large continuous structures with nonuniform cables, arches and portal frames, framed structures, temporary joints, comparisons of economy in design, ultimate moment of a section, and various tests on component units and structures.

Both volumes may be obtained from the publisher located at 440 Park Avenue South, New York 16, N. Y. Volume I is $16.25 and Volume II is $16.75.

New Dravo subsidiary

■ Dravo Corp., Pittsburgh, Pa., has formed a new subsidiary, Potomac Sand & Gravel Co., in Washington, D. C.

The subsidiary, which has been incorporated in the District of Columbia by Dravo and Charles P. Maloney, Washington businessman, has purchased the production equipment and plant, along with the dredging rights, of the Smoot Sand & Gravel Corp. The Smoot operation consists of two large plants in Washington; a fleet of dredges, tugs, and barges; and extensive deposits of aggregates in the Potomac River.

Dravo holds majority interest in the new company and will manage it.

D. R. Hoke, heavy equipment manager for Conetoe Supply Co., Conetoe, N. C., states: "Our Barber-Greene 774 has given us two years of high output, low upkeep ditching performance on drainage and soil conservation work. On this farm, we will cut 4,065' of trench in one day. And the balance and flotation of this baby lets us use it in soil that bogs down other ditchers.

"Operational features are equally good. I like the hydraulic controls . . . Hydra-Crowd transmission that lets operators take full advantage of digging conditions without loss of cutting wheel speed . . . and fast discharge of spoil conveyor whose variable controlled belt speeds lets you pinpoint discharge distance. If we were replacing this rig tomorrow, it would be another Barber-Greene of equal size."

Exclusive dual-range Hydra-Crowd transmission is the prime feature that helps all Barber-Greene owners ditch 25-200% faster on every job. Operators dial *instantly* the maximum crowding speed for every digging condition or reverse *instantly*, too. They select from infinitely *variable* crowding speeds *independent* of wheel and conveyor drive. No guesswork about gear ranges, no clutching, shifting or stopping to change speeds.

Have your Barber-Greene Distributor show you your size ditcher in action. You'll get proof why Hydra-Crowd plus these additional exclusive features make Barber-Greene the only modern ditcher line: Flexible drawbar between chassis and boom; all-hydraulic spoil conveyor independent of wheel speeds; hydraulic controls for greater line-and-grade-holding accuracy; crawler adjusted 10 times faster than ordinary ditchers; and automatic overload protection.

Light-treading 774 Ditcher moves swiftly across 10 acres of soggy North Carolina soil cutting 20" wide trench to average 4' depth to drain tract for tobacco. Center-of-track balance gives the traction and flotation needed for working this soil.

◀ For more facts, use Request Card at page 18 and circle No. 294

S. J. Groves & Sons' policy in public relations pays off in

Good will for a firm —and an industry

Contractors and Engineers staff article

Most people who know of S. J. Groves & Sons Co. have something good to say about the company and the work it does. And there are a lot of people who know about S. J. Groves.

This is no accident. The company strives to maintain good relations with public officials, awarding authorities, organized labor, and the general public. The firm finds that this policy is not only beneficial to its own growth but is also good for the construction industry.

In their work around the country, the men of S. J. Groves & Sons come in contact with a lot of people. Although the Minneapolis-based company operates primarily in the eastern half of America, it has bid on work in all of the states. It grades and paves highways, builds bridges, and constructs airports and dams. Under the able leadership of Frank M. Groves, the 56-year-old company does about $60 million worth of work each year.

For S. J. Groves & Sons, public relations starts with the people in the company. These people, from the flagman to the superintendent, from the secretary to the president, must take pride in the work they are doing. The sum total of all their efforts must result in a long-lasting highway or a well built bridge.

Says E. J. Rainey, vice president of the company, "You've got to have an honest product before you can have good public relations."

A part of public relations is the personal contact that the employees have with people on the outside—motorists passing through a job, property owners, state highway engineers, job owners, U. S. Army Corps of Engineers personnel, civic groups, and personal friends.

Since Groves' employees are sold on what they are doing, they will naturally sell themselves and their product to the people they meet. This is public relations on a personal level, and it is encouraged by the firm.

Another form of contact encouraged by the company is participation in civic and public affairs. Rainey, for example, is a member of the Highway Committee of the Minneapolis Chamber of Commerce and is active in the American Road Builders' Association. He occasionally speaks before other civic groups on matters relating to highways. The benefit of his many years of experience in the highway field is put to good use for these organizations.

Rainey holds that a contractor should not be so wrapped up in his own personal effort that he can't contribute both time and money to civic organizations and to local and national contractor associations. Participation in these organizations benefits the construction industry. And these benefits will in the long run be returned to the individual contractors.

In addition to contributing to the AGC and the ARBA, S. J. Groves & Sons is giving active support to the recently formed Better Highways Information Foundation. Rainey is regional director of BHIF. He coordinates information distribution and fund raising in a 7-state area.

He encourages all contractors to make use of the published material that is being put out to sell the highway program to the public. A pamphlet that explains, in simple, persuasive language, the need for better highways now is currently available, along with radio and TV scripts, articles, and material for speeches.

The top men of S. J. Groves & Sons do all they can to make the public aware of the need for better high-

Save on construction costs with the new '61 FORD TRUCKS

SAVE FROM $22 TO $260 ON PRICE* ALONG WITH FORD'S ECONOLINE PICKUP

Profit-conscious contractors are finding it's good business to do business with the new Ford Econoline Pickup. It's America's lowest-priced* ½-tonner—bar none! Priced from $22 to $260 below conventional pickups. But that's just the beginning! You get lively performance and proven gas economy with the popular 144 cubic inch Falcon Six. This modern engine goes 4,000 miles between oil changes, and has an aluminized muffler which lasts up to three times as long as ordinary mufflers.

And you can save more because Ford's functional design has pared away 1,000 pounds of dead weight, yet you still get the payload capacity of standard ½-tonners. The big 7-foot box provides a whopping 73 cubic feet of loadspace . . . that's up to 23% more than conventional 6½-foot pickups. A full 49-inch tailgate opening means you can load items like standard sheets of 4′ by 8′ plywood. And the full-length *flat* floor permits bulky or heavy loads to be positioned easily by sliding them anywhere in the pickup box.

And you can save on maintenance expense too. The engine cover can be lifted quickly exposing the entire engine for rapid service. Spark plugs, distributor, etc., are conveniently located to speed engine tune-ups. And many major repairs can be made without ever removing the engine. One-piece cab-and-body construction provides increased rigidity and eliminates a major source of rust. In addition, all main underbody structural members are heavily zinc-coated to resist rust and corrosion.

New Ford Econoline ½-ton Pickup. Big 7-foot box with flat floor and 73 cu. ft. of usable loadspace. 1,650-lb. payloads with 4,350-lb. maximum GVW.

*Based on a comparison of latest available manufacturers' suggested retail delivered prices

ways. Company airplanes were recently loaned to carry newsmen on a tour of interstate highway projects in Illinois, Ohio, and Pennsylvania. In this way, the company contributed to increasing the public's understanding of the nature and scope of the highway program.

S. J. Groves & Sons does more than just build a good road. It takes time out to tell people about it. And it tells people not only about the part of the road Groves is building, but about the entire length of the road that many contractors are building.

THE END

BACKFILLING a 12-inch concrete cross drain constructed as part of the Waters Road widening project in Chatham County, Ga., is being handled by a Hough Model H-50 Payloader with Drott 4-in-1 bucket. Dixie Contracting Co., Savannah, is the subcontractor for the drainage work on the project.

SAVE UP TO $250 ON FRONT TIRES! In certified tests of two-ton truck suspensions, Ford front tires lasted over twice as long. In 40,000 miles this saving can add up to $250 . . . more as the mileage increases. And Ford's sturdy I-Beam front axle and leaf-spring suspension not only cut tire wear, but their simpler design also cuts maintenance costs.

SAVE WITH FORD'S NEW 262-CU. IN. "BIG SIX" ALL-TRUCK ENGINE FOR TOP PERFORMANCE AND ECONOMY

America's lowest-priced* medium-duty tilt-cab models now offer a big 262-cubic-inch Six with the power of big displacement, the gas economy of 6-cylinder design, plus the durability of heavy-duty construction. This engine features a sturdy stress-relieved head and block, strong forged steel crankshaft, long-lasting stellite-faced intake and exhaust valves and durable pyramid-type connecting rods. Positive Crankcase Ventilation reduces oil dilution and sludge formation to extend engine life. Ford's proven 292 V-8 and 292 HD V-8—the V-8's with "six-like" economy—are also available for your special power needs.

The popular Ford Tilt Cab Series outsells all other makes and for good reason! Their compact 82-inch BBC permits longer bodies within a given over-all length . . . for longer loads of lumber and building materials with excellent maneuverability. And set-back front axle design means more weight is carried on the front axle for greater payloads.

You also save with other new features like the stronger radiator with new lock-seam construction, and color-coded printed instrument panel electrical circuits that provide for greater reliability and simplified maintenance. In addition, Ford's parallel ladder-type frame, with standard 34-inch width, allows you to install new or transfer your present special construction bodies quicker and for less.

12,000 MILE OR 12 MONTH WARRANTY

SAVE WITH GREATER DURABILITY . . . on all 1961 Ford Trucks, each part, except tires and tubes, is now warranted by your dealer against defects in material and workmanship for 12 months or 12,000 miles, whichever occurs first. The warranty does not apply, of course, to normal maintenance service and to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points. Never before have you had such protection . . . such evidence of long-term economy!

NEWS OF MORE SAVINGS FOR HEAVY CONSTRUCTION WORK . . .

For more facts, use Request Card at page 18 and circle No. 295

Professionalism studied in survey of engineers

■ "Engineering Professionalism in Industry," a survey for The Professional Engineers Conference Board for Industry, in cooperation with the National Society of Professional Engineers, is now available in booklet form from the National Society, 2029 K St. N.W., Washington 6, D. C.

The purpose of the study was to determine what engineers and engineering managers mean by professionalism and how they think it can best be advanced. The 104-page booklet is divided into five parts dealing with professionalism, its importance, its meaning, its present status, how it can be advanced, and related issues.

The survey, complete with illustrative tables and an appendix, may be obtained from the NSPE at $4 per copy for nonmembers and $2 per copy for members.

Iron, steel association elects assistant veeps

■ The board of directors of American Iron & Steel Institute, New York, N. Y., has elected W. G. Kirkland and R. E. Paret assistant vice presidents.

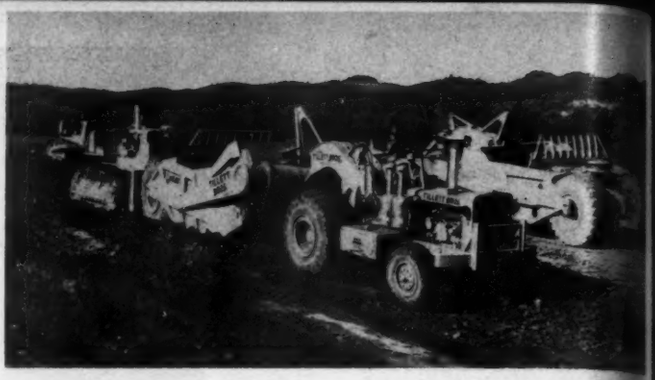
Kirkland's duties will be in the field of building research and technology and Paret's in the promotion of uses of steel.

AWS issues revision of welding definitions

■ The American Welding Society, New York, N. Y., has issued a new revision of "AWS Standard Welding Terms and Their Definitions."

A new master chart of the 39 recognized welding processes has been prepared in conjunction with the standard booklet. Colors are used to identify various processes. The chart comes in two sizes: an 8½ × 11-inch size for desk use and a 22 × 26-inch size for wall use.

Copies of the Definitions (including desk chart) are available for $2 per booklet. Copies of the AWS wall or desk chart may be obtained separately at a list price of $1.50 and 50 cents respectively, from the American Welding Society, Dept. T, 33 West 39th St., New York 18, N. Y.



Hauling out of both sides of a cut in a Tennessee interstate job are rigs worked by Tillett Bros. Construction Co., Inc., Shelbyville, Tenn. Three Cat DW20-482's and 11 DW21-470's, split into two spreads of seven each, often work from the same excavation. Five Cat D9 tractors and one D8 work as pushers, keeping scrapers on the move. The scraper fleet moved 600,000 yards of material in 25 days.

Efficient use of scrapers, tractors enables grading contractor to

Cut earthmoving time in half on interstate job

Efficient use of an equipment spread of 82 units is enabling Tillett Bros. Construction Co., Inc., Shelbyville, Tenn., to cut earthmoving time in half on a 4.085-mile stretch of Interstate 40 near Gordonsville, Tenn.

The firm, which was awarded three Tennessee Interstate Defense Highway contracts totaling $4 million last July, is clearing, grading, and providing drainage on the Gordonsville project.

In general, the job calls for two pairs of 12-foot lanes divided by a median that will vary from 60 to 1,000 feet wide; four bridges made of precast, prestressed-concrete box girders from 125 to 224 feet in length; two box culverts measuring 8 × 5 × 332 feet and 10 × 7 × 256 feet; and approximately 5,132 feet of 8 to 66-inch concrete and corrugated-metal drainage pipe. The $1,291,674 contract requires moving some 1,350,000 yards of earth and rock within 300 working days.

Although heavy rains reduced its work schedule to only 25 days in a 2-month period, the firm was able to move 600,000 yards of material with its fleet of 18 Caterpillar wheel and crawler-drawn scrapers. During that period, it moved a record 300,000 yards in eight 10-hour days. Haul distances ranged from 1,200 to 1,500 feet.

Get most out of equipment

Joe and Gerald Tillett, president and secretary-treasurer, respectively, and general superintendent Albert Jones know how to get the most out of their equipment. Their tractor-scraper fleet consists of 11 Cat DW21-470's, three DW20-470's, three DW20-482's, and four D8-463's. The wheel tractors are split into two spreads—seven DW21's in one, and four DW21's and three DW20's in another. The latter spread is used for longer hauls.

When possible, both spreads work out of the same cut and speed in opposite directions with payloads. With the spreads working in the same area, push loading can be handled by five Cat D9 tractors and one D8. There is little lost motion, and a rig seldom stands idle.

Tillett has equipped three of its D9 pushers with 9C cushion bulldozers and one of them with a No. 9

Save on construction costs with the new '61 FORD TRUCKS

NEW SUPER DUTIES CUT OPERATING COSTS GIVE PROVEN DURABILITY THAT'S BACKED BY A 100,000 MILE ENGINE WARRANTY

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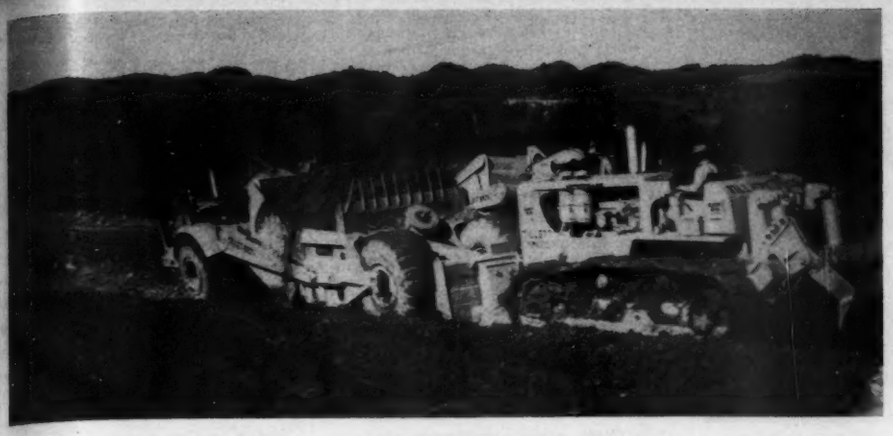


A D9 equipped with a 9C cushion bulldozer push-loads a DW21 tractor-scraper. The pusher is able to make contact in second gear, shaving up to 5 seconds from loading time. Load time averages 35 to 40 seconds.

ripper. The cushion dozers allow the D9's to make contact in second gear, absorbing the shock impact, and cutting five seconds off push-loading time. Average load-out time for the DW21's is 35 to 40 seconds; under good conditions, they have loaded out in as little as 22 seconds. Total cycle time over an average 1,500-foot haul is 3½ to 4 minutes, with the DW21-470's averaging 20 loose yards per trip and the larger DW20-482's, 24 yards. Four Cat No. 12 and one No. 14 motor grader, used to maintain the haul roads and blade fills, help to keep production up.

Generally, scrapers are not permitted to remain in the cut for more than an average load. On extra-long hauls, however, the DW20-482's are permitted to stay in the cut longer for above-average loads.

Another advantage of the 9C dozers is their ability to keep the cut dressed between push-loading cycles, enabling the scrapers to zip in and out of the cut without constantly fighting ruts and ridges. In addition, the heavy-duty blade dozes aside stray boulders uncovered in the pit.

Ripping preferred

The ripper is used when shale, tough chert, and permeable limestone are encountered. The Tilletts believe that ripping is 10 to 20 times faster (depending on the rock) and 60 to 65 per cent cheaper than drilling and blasting. Thus far, the D9 has broken out some 80,000 yards of rock. Because the material emerges well shattered, it is loaded directly by the scraper rather than with a power shovel. Generally, the crawler-drawn 463's handle the limestone, and the wheel-drawn 470's the shale.

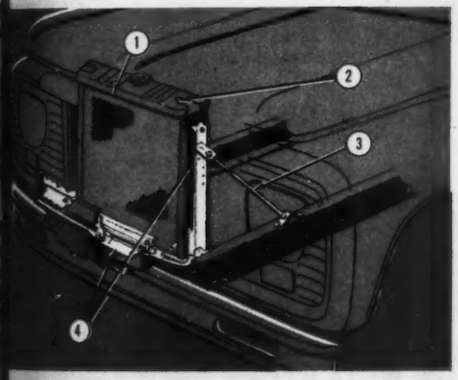
In addition to keeping its crawler-scrapers on short hauls—up to about 1,000 to 1,200 feet—and hauling ripped rock, the firm uses them on steep slopes, four of which have a 70 per cent rise. The 4-wheel scrapers are also used in stripping topsoil, roughing in fill, loading out the 3 to 4 feet of wet gumbo usually found just above limestone layers in that area, and undercutting grade changes—the V point in which the cut area adjoins the fill.

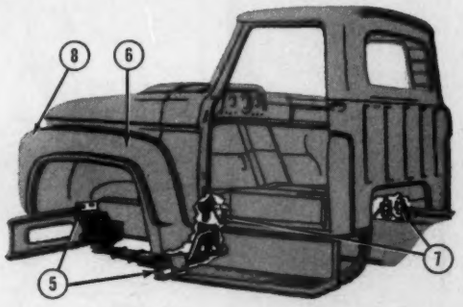
A soft spot often develops at this point, slowing up equipment on the haul. Consequently, the D8-463's are used to undercut that section to a width of 50 to 75 feet and about three feet deep before hitting stable material. The cut is then backfilled with new material by the scrapers, and compacted.

Some drilling necessary

Tillett found it necessary to drill and blast some 250,000 yards of tight limestone, most of it in one 40-foot rock cut 700 feet long. For this operation, two Gardner-Denver DH143 compressors with a 4½-inch drill and 20-foot tower mounted on a Cat D8, and a G-D DH123 Air Trac with 2¾-inch drill were used. The larger holes were punched on 12-foot centers, smaller holes on 5-foot centers. Rock was blasted with ready-mixed Olin ammonium nitrate and diesel fuel. A Bucyrus-Erie 71-B with 3½-yard

SAVE WITH NEW HEAVY-DUTY CONSTRUCTION THAT DOUBLES CAB, SHEET METAL AND RADIATOR LIFE





1) **Save with Ford's exclusive "lock-seam" radiator construction** that doubles the solder area at key seams for greatly increased strength and longer radiator life.

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3) **Save with independent radiator mountings,** separate from front-end sheet metal. This means that road shocks and shakes are not transmitted to the radiator through sheet metal . . . tanks, tubes and connections last longer, require less maintenance.

4) **Save with "horse collar" mounting** for extended radiator life. This new mounting on resilient rubber at the center of frame cross member soaks up any frame flexing . . . cuts wear and tear on entire cooling system.

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7) **Save with new 3-point cab mounting system** for greater cab durability. Two outboard front mounts plus a centered "twin" rear mount provide a triangular system that holds the cab stationary while allowing the frame to move independently . . . reducing strain on the cab.

8) **Save with 25% heavier-gauge sheet metal** in fenders, cab floor pan and toeboard for longer life through more strength and greater resistance to corrosion.

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For more facts, use Request Card at page 18 and circle No. 296

Loading a Euclid 27-ton rear-dump with material from a 40-foot rock cut is a Bucyrus-Erie 71B with a 3½-yard bucket. One dozer is used to work around the shovel, another to spread rock on the fill. The cut contains some 250,000 yards of tight limestone.

(Continued from preceding page)

bucket loaded three 27-ton Euclid rear-dump trucks. One Cat D8 tractor was used for cleanup around the shovel, another for spreading rock on the fill.

In all, the project has some 20 cuts and fills. The largest cut is 65 feet deep and 1,000 feet long; the largest fill is 50 feet deep and 1,500 feet long. All are about 200 feet wide.

Other major equipment used on the project includes six more D8's and four D7's, which are used for clearing, dozing, and pulling compactors; a Cat 977 Traxcavator [illegible] in lifting and laying drainage pipe and back-filling; a Koehring 2[illegible]-yard backhoe for cutting drainage-pipe ditches; 12 American, Tampo, [illegible] Ferguson rollers; a 4,500-gallon water truck; two lubrication trucks; [illegible] welding truck; seven ¾-ton pickup trucks; and miscellaneous equipment.

Superintendent Albert Jones is assisted by Guy Sandlin, general rock superintendent; Frank Tatum, rock superintendent, night shift; Harold Selby and W. C. Rucker, grade foremen; Emmett Rainey, pipe foreman; Dooley Hood, chief mechanic; and Ada Taylor, office manager. About 90 men are on the project, with the rock crew working two 9½-hour shifts, the earthmoving crew one 10-hour shift, five days a week. Tom Kin[illegible]

Gardner-Denver film awarded prize

■ "Principles of Rotary Air Drilling," a 20-minute sound film produced by Gardner-Denver Co., Quincy, Ill., won a top award in the annual industrial-films competition of *Industrial Photography* magazine.

The film, chosen as best in the category of sales training films produced within a company's photographic department, features three drilling rigs in G-D's Mayhew Co. division in Dallas. The differences between percussion and rotary air drilling are illustrated, as well as the newer techniques of rotary drilling.

The film may be obtained on a free loan basis for groups and companies interested in the solution of rock-drilling problems. Write to Film Library, Gardner-Denver Co., Quincy, Ill.

Western Machinery acquired by McKee

■ Arthur G. McKee & Co., Cleveland, Ohio, international engineering and construction firm for the steel, petroleum, and chemical industries, has acquired the Western Machinery Co. with headquarters in San Francisco.

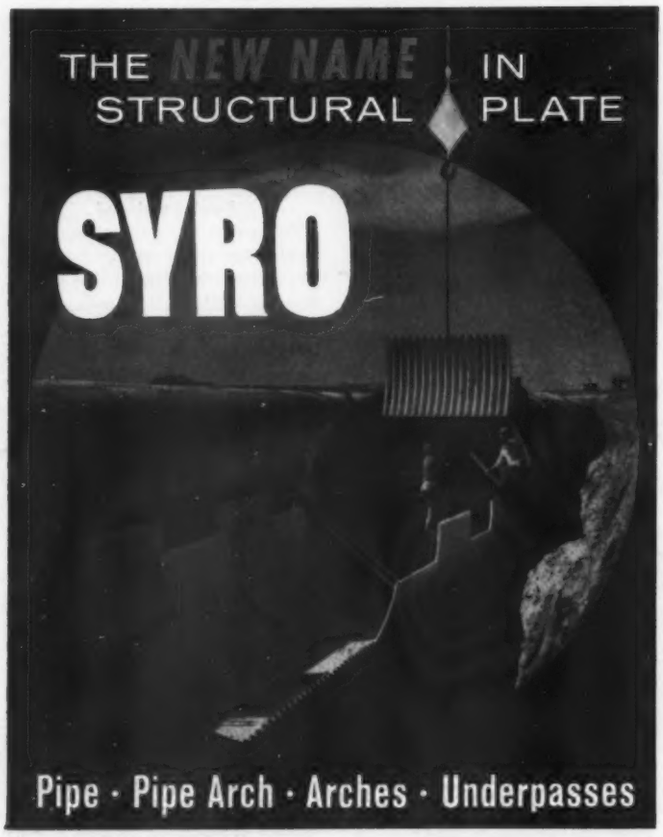
Western Machinery is composed of three divisions—The Western Knapp Engineering Division, the WEMCO Division, and the Distribution Group.

Geology consultant firm appoints new manager

■ Doeringsfeld, Ameudo & Ivey, consulting geologists of Denver, Colo., has named John C. Bayless manager of engineering geology operations.

Bayless formerly served as geologist, project administrator, and director of customer relations for Abrams Aerial Survey Corp.

Specializing in the geologic interpretation of aerial photographs, the Denver consulting firm is active in exploration for new oil and ore deposits, and in engineering geology.



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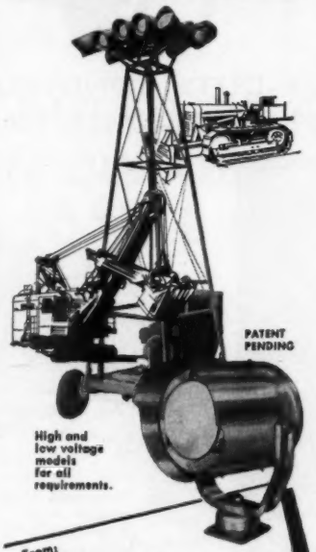

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In a vibrating screening rig vibrating 700 RPM with ⅞" throw, bulbs in STURDILITES, burning round the clock, last as long as 50 days. In all other fixtures bulbs have to be replaced once a day. STURDILITES are now used regularly on earth moving equipment.

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Convention Calendar

March 5–8 American Road Builders' Association
Fifty-ninth convention, Chalfonte-Haddon Hall, Atlantic City, N. J. ARBA, World Center Bldg., Washington 6, D. C.

March 7–9 College of the Pacific Highway Conference
Conference, College of the Pacific, Stockton, Calif. Adelbert Diefendorf, dean, School of Engineering, CPHC, College of the Pacific, Stockton, Calif.

March 13–17 National Association of Corrosion Engineers
Seventeenth annual conference and 1961 Corrosion Show, Hotel Statler, Buffalo, N. Y. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

March 15–17 Short Course for Superintendents and Operators of Water and Sewerage Systems
Twenty-fourth annual course, Pleasant Hall, Louisiana State University, Baton Rouge, La. General Extension Division, Pleasant Hall, Louisiana State University, Baton Rouge, La.

March 19–25 American Society of Photogrammetry
Meeting, Shoreham Hotel, Washington, D. C. C. E. Palmer, secretary-treasurer, ASP, 1515 Massachusetts Ave. N.W., Washington 5, D. C.

March 22–25 American Congress on Surveying and Mapping
Meeting, Shoreham Hotel, Washington, D. C., Walter S. Dix, secretary, ACSM, Room 430, Woodward Bldg., 733 15th St. N.W., Washington 5, D. C.

March 27–30 Purdue Road School
School, Purdue Memorial Center, Purdue University, Lafayette, Ind. J. F. McLaughlin, associate professor of civil engineering, Civil Engineering Building, Purdue University, Lafayette, Ind.

April 4–5 Earthmoving Industry Conference
Twelfth annual conference, Pere Marquete Hotel and Madison Theatre, Peoria, Ill. Irwin Joslin, publicity chairman, EIC, P. O. Box 973, Peoria, Ill.

April 4–6 Ohio Highway Engineering Conference
Conference, Ohio State University, Columbus, Ohio. Emmett H. Karrer, professor of highway engineering, Ohio State University, 2036 Neil Ave., Columbus 10, Ohio.

April 4–6 New York State Association of Highway Engineers
Meeting, Hotel Statler Hilton, Buffalo, N. Y. Edward W. Umiker, general chairman, NYSAHE, Box 12, Niagara Square Station, Buffalo 1, N. Y.

April 6–16 International Construction Exhibition
Third International Exhibition, Exhibition Grounds, Porte de Versailles, Paris, France. Exhibition Secretariat, ICE, 1, Avenue Neil, Paris 17, France.

April 10–14 Greater New York Safety Council
Thirty-first Annual Safety Convention and Exposition, Hotel Statler, New York, N. Y. William Farley, GNYSC, 60 E. 42nd St., New York 17, N. Y.

April 17–21 American Welding Society
Forty-second annual convention and Welding Exposition, Commodore Hotel and the Coliseum, New York, N. Y. Arthur L. Phillips, secretary of information and education, AWS, 33 W. 39th St., New York, N. Y.

April 18–20 South Dakota Highway Short Course and Bituminous Conference
Course, Union Bldg., South Dakota State College, Brookings, S. Dak. Emory E. Johnson, SDHSC, South Dakota State College, Brookings, S. Dak.

April 23–26 Canadian Association of Equipment Distributors
Annual meeting, Hotel Vancouver, Vancouver, B. C., Canada. A. MacNamara, managing secretary, CAED, 409 Journal Bldg., 247 Queen St., Ottawa, Ont., Canada.

April 23–28 Western Association of State Highway Officials
Fortieth annual convention, Flamingo Hotel, Las Vegas, Nev. Nevada Department of Highways, Reno, Nev.

April 27–29 Texas Aggregate Association and Texas Ready Mix Concrete Association
Meeting, Robert Driscoll Hotel, Corpus Christi, Texas. Ray L. Cain, executive secretary, TAA and TRMCA, 201 Perry Brooks Bldg., Austin, Texas.

April 28 Conference for Engineers and Architects
Conference, Mershon Auditorium, Ohio State University, Columbus, Ohio. Marion L. Smith, associate dean, College of Engineering, Ohio State University, 140 W. 18th Ave., Columbus 10, Ohio.

May 5–6 American Institute of Steel Construction
Twelfth annual national engineering conference, Brown Palace Hotel, Denver, Colo. William C. Brooks, director of publicity, AISC, 101 Park Ave., New York 17, N. Y.

May 8–10 Highway Transportation Congress
Ninth congress, Mayflower Hotel, Washington, D. C. Arthur C. Butler, director, National Highway Users Conference, 966 National Press Bldg., Washington 4, D. C.

May 22–24 Construction Specifications Institute
Fifth annual convention, Commodore Hotel, New York, N. Y. Ronald S. Ryner, executive secretary, CSI, 632 Dupont Circle Bldg., Washington 6, D. C.

May 22–25 Design Engineering Conference of the American Society of Mechanical Engineers
Conference, Cobo Hall, Detroit, Mich. Robert M. Baldini, assistant manager, ASME, 29 W. 39th St., New York 18.

May 24–27 National Rivers and Harbors Congress
Forty-eighth national convention, Mayflower Hotel, Washington, D. C. William H. Webb, executive vice president, NRHC, Suite 523-A, La Salle Bldg., 1028 Connecticut Ave. N.W., Washington 6, D. C.

May 29–30 Wire Reinforcement Institute
Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Frank B. Brown, managing director, WRI, 1049 National Press Bldg., Washington 4, D. C.

May 29–June 3 Concrete Reinforcing Steel Institute
Meeting, The Greenbrier, White Sulphur Springs, W. Va. H. C. Delsell, managing director, CRSI, 38 S. Dearborn St., Chicago 3, Ill.

Olin Mathieson names

■ Vincent F. Villella is the new manufacturing superintendent of Ramset Fastening System, part of Winchester-Western Division, Olin Mathieson Chemical Corp., New York, N. Y.

Villella was formerly superintendent of engineering for the corporation's Energy Division.

Pit foreman J. Steinmetz says, "You can't buy better portable equipment."

Oregon Stone Quarries works 3 to 4 pit locations per season using their 24 x 36 Lippmann portable primary . . . reports 200 tph output at 75 to 80% crushing, producing minus 4" stone. After 4 years' operation they report, "No maintenance required."

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You'll make *additional* savings in daily operating costs. Massive counterbalanced flywheel (bigger than on other makes) more effectively stores power for crushing stroke, makes substantial savings in fuel costs. Oversize bearing assemblies, with removable retainer ring for easy field servicing, keeps repair and downtime costs to a minimum.

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Owner Al Sells says, "When we're ready for another primary, you can bet it'll be a Lippmann."

Sells Bros. Stone & Gravel uses their 24 x 36 Lippmann portable at scattered pits in East-Central Wisconsin. Here, they average 150 tph with 95-100% reduction of blasted limestone, producing minus ¾" materials. At another location they reported 200 tph at 70% reduction.

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Names in the News

Contractor group elects

David M. Hunt was recently re-elected to his second 1-year term as president of the General Building Contractors Association of the Philadelphia 5-county area. He is president of his own construction firm.

The association re-elected three officers for 1-year terms and named four members to the board of directors for 3-year terms.

Other officers elected were: John S. McQuade, Jr., first vice president; James J. Clearkin, second vice president; and Thomas S. Keefer, Sr., treasurer.

New members of the board of directors are: William J. Cover, Jr., Harold H. Gebert, Perry J. Goldman, and Harry B. Hackman.

Asphalt Institute news

A. Blake Cornthwaite has been named managing engineer for the Atlantic-Gulf Division of The Asphalt Institute, College Park, Md. He will direct the engineering activities of the institute in a 20-state area along the Atlantic and Gulf coasts and including Tennessee.

Cornthwaite was formerly engineer in charge of the materials and tests division, Virginia Department of Highways.

New headquarters for the institute's Atlantic-Gulf Division will be established at 1901 Pennsylvania Ave. N. W., Washington, D. C. The New York office will be maintained as a district engineering office.

Gordon F. Whitney has been appointed area engineer for southern California and Arizona. He replaces Richard Titera, assistant district engineer, who resigned.

BPR names consultant

E. Paul Gilgen, county engineer in Weber County, Utah, has been named a member of the Board of County Engineer Consultants to the Bureau of Public Roads, U. S. Department of Commerce, Washington, D. C.

The board, composed of nine men representing each geographic area of the United States, advises the bureau in matters involving construction and improvement of secondary or farm-to-market roads that are eligible for federal aid, and fosters cooperation among the engineers of the counties, the state highway departments, and the Bureau of Public Roads.

Gilgen replaces LaMont B. Gunderson, who has resigned.

ACPA appointment

The American Concrete Pipe Association, Chicago, Ill., has appointed Ray C. Freseman assistant to the managing director.

For the past year, Freseman has served as a design engineer specializing in foundation design for Meissner Engineers, Inc., Chicago.

Burns & Roe names

Melbourne A. Forrest has been elected to the board of directors of Burns & Roe, Inc. A vice president of the firm, he is responsible for project operations in power, nuclear, and industrial fields, as well as defense and aeronautical facilities.

Last year Forrest was made a director of the power and industrial facilities division. He became a vice-president in May, 1960.

Delaware River authority elects new chairman

Ralph Cornell has been elected for a 2-year term as chairman of the Delaware River Port Authority of Pennsylvania and New Jersey at the general meeting of that body in Camden, N. J.

Cornell is president of Cornell & Co., an independent steel contracting firm of Woodbury and Philadelphia. He has been vice chairman of the Port Authority for the past two years.

The authority recently opened its first office abroad, with the establishment of a freight-solicitation terminal in London. It is also studying mass transportation in south New Jersey.

Corps appointment

Maj. John F. White will become the deputy of Col. Alfred J. D'Arezzo, district engineer, U. S. Army Engineer District, St. Louis, Mo.

White has just returned from southeast Asia, where he was engineer and logistical advisor to a military mission. He succeeds Lt. Col. Russell J. Wilson, who has been transferred to Fort Leavenworth, Kans.

Gov. Nelson A. Rockefeller accepts a hard hat from New York Building Trades Employers' Association officers I. Roy Psaty, left, and H. Earl Fullilove at the annual BTEA dinner in the Waldorf-Astoria. Psaty and Fullilove are president and chairman of the board of governors, respectively. The governor was guest speaker at the dinner.

Gov. Rockefeller guest at BTEA annual dinner

Gov. Nelson A. Rockefeller was the guest speaker at the annual dinner of the New York Building Trades Employers' Association held on January 19 in the Grand Ballroom of the Waldorf-Astoria. More than 1,100 guests and members attended.

I. Roy Psaty and H. Earl Fullilove, president and chairman of the board of governors, respectively, of BTEA, presented Gov. Rockefeller with a hard hat in honor of the occasion.

Pennsylvania Highways personnel changes

The Pennsylvania Department of Highways, Harrisburg, Pa., has appointed Sidney R. Collins district engineer at Montoursville. Since 1945, he has been a private engineering consultant to municipalities on the construction of sewers and water systems, street and bridge design, and subdivision surveys.

Harold W. Reitz, who has served as acting district engineer since January, 1959, is being transferred to his former position as design engineer at Harrisburg.

IRF elects three to board of directors

Gail E. Spain, E. A. Hugill, Jr., and Gerald T. McCarthy have been elected to the board of directors of the International Road Federation, Washington, D. C.

Spain is vice president of Caterpillar Tractor Co., Peoria, Ill., and president of the firm's foreign-trade group. Hugill is assistant to the president and secretary, Shell Oil Co., New York, N. Y. McCarthy is a partner in the consulting engineering firm of Tippetts-Abbett-McCarthy-Stratton, also of New York City.

William L. Crow company elects new treasurer

Samuel Frothingham is the new treasurer of the William L. Crow Construction Co., New York, N. Y.

He joined the firm as project manager in 1949. Before that, he had been associated with Frothingham & Smith and Johnston Livingston Co., both New York general contractors.

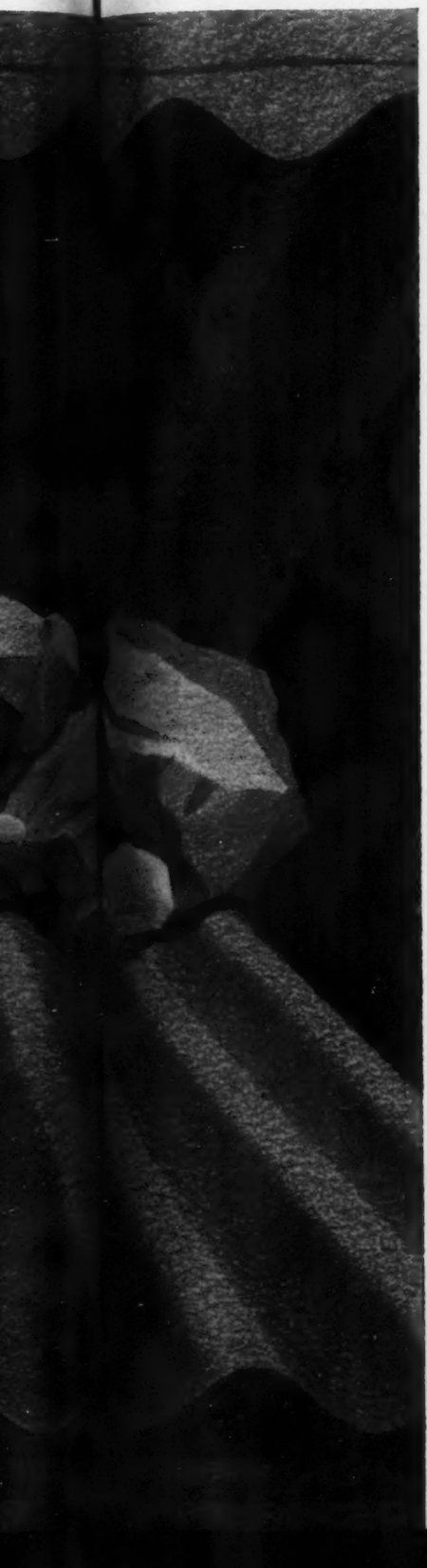
S. W. Brown associate

S. W. Brown, consulting engineering firm of New York, N. Y., has appointed Herbert Pomerantz, P. E., an associate. Pomerantz previously served as project manager of the firm, which provides integrated mechanical, electrical, and plumbing engineering services.

Florida Authority names

John M. Hammer is the new chairman of the Florida State Turnpike Authority, Fort Lauderdale, Fla. He will maintain his office in Tampa.

◀ For more facts, use Request Card at page 18 and circle No. 300.



SHOULD YOU BUY
REPLACEMENT
PARTS
FROM THE COMPANY THAT
BUILT YOUR CRUSHER?

Star Rock Products did, and increased their tonnage 75%

At Star Rock Products Co., Anaheim, California, crusher jaw plates previously used were giving only about 6 months' service. Large rocks often caused the jaw plates to "give" enough so the rocks wouldn't crush. Jams and costly delays resulted. Plates would often flow and crack.

Amsco and the crusher manufacturer developed a new design, using 2% chrome (Amsco MY) alloy. After 6 months' service, the plates were in excellent condition. Jams and delays have been eliminated and tonnage handled increased 75%.

Cases like this are not unusual, because it's often difficult to resist an "experiment". After one experiment, though, most producers rediscover that the "factory part" delivers the goods.

Amsco and leading crusher manufacturers work together to assure you of maximum value in parts such as hammers, rolls, jaw plates, mantles and concaves. Avoid experiments—buy maximum value through your crusher manufacturer or his dealer.

AMSCO

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OTHER PLANTS IN: Denver • Los Angeles
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AMERICAN Brake Shoe COMPANY

A new venture in space exploration, and a complicated construction project, begins at Sugar Grove, W. Va., where a huge radio telescope, the height of a 50-story building and 600 feet in diameter, is being built. Big cranes at ground level and 100-ton derricks atop 420-foot construction towers will handle work on the support structure for the "listening dish" at the U. S. Naval Radio Research Station.

Heavy lifts mark start of support structure for "listening dish"

Over 20,000 tons of structural steel is going into the main supporting structure of a radio telescope, the height of a 50-story building, at the U. S. Naval Radio Research Station, Sugar Grove, W. Va. The American Bridge Division, U. S. Steel Corp., is handling the erection.

Approximately $100 million will be spent to construct the telescope, which will rotate on a turntable 458 feet 10 inches in diameter and support a 600-foot-diameter "listening dish" designed to receive electromagnetic signals from distant celestial bodies. It is hoped that new information will be obtained as to the location and size of some of the millions of bodies in space, their distances from the earth, and the dangers they may hold for space travelers.

Manitowocs set steel for the installation's supporting structure. Steelwork for the project is being handled by American Bridge Division, U. S. Steel.

To handle the steel erection work, American Bridge is using a Manitowoc Model 4000, 125-ton-capacity lift crane and a Manitowoc Model 3500 crane with an 80-foot boom and a 30-foot jib. The Model 4000 has proved particularly advantageous because it can operate within the limited working space that ordinarily would require the agility of a lightweight crane. It is designed to travel and swing at the same time, or, if required, boom and hoist while traveling and swinging.

Time and money were saved in moving the Model 4000 on trucks directly to the job site from Washington, D. C. All components of the crane were loaded on eight trucks, thus eliminating the need for rail shipment to the closest point to Sugar Grove, a distance of 45 miles, and then transferring the load to trucks. Assembly time for the unit after delivery was only two days.

Prior to beginning work on the permanent structure, American Bridge built two 420-foot construction towers, which are equipped with 100-ton derricks having 250-foot booms. These will be used to erect the steel for the upper part of the telescope. The heaviest units that will eventually be lifted by the Model 4000 will be the "trucks," 55-ton enclosures to house the large wheels on which

for *FASTER* handling and placing of concrete!

THERE ARE MANY EXTRA ADVANTAGES for you in the completeness of the GAR-BRO line. Every item of equipment is matched to work together. For instance, the clearance of floor hoppers and portable hoppers matches the height of carts and Power-carts. Only Gar-Bro makes such a wide variety of types and sizes of concrete buckets. All have patented double clamshell gates . . . all have attachments . . . and all have the fittings for easy attaching.

Whether the placing job is deep down into the narrow confines between reinforcing steel, or 40 feet under water, or high on the 54th floor of a concrete building, Gar-Bro Concrete Handling Equipment can help you deliver and place concrete easier, faster and better.

See your Gar-Bro dealer and be sure to ask for your free copy of the Gar-Bro Manual and Concrete Equipment Handbook.

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the entire radio telescope will rotate on tracks.

The project is scheduled for completion in early 1964. It will then supplant the largest radio telescope presently in existence, a 250-foot instrument at Jodrell Bank, England. The telescope is being built under a joint venture consisting of Tidewater Construction Co., Norfolk, Va.; Peter Kiewit Sons' Co., Omaha, Nebr.; and Patterson-Emerson-Comstock, Inc., Pittsburgh, Pa., as the prime contractor. THE END

PRESTRESSED-CONCRETE TANKS, 320 feet diameter and 28 feet high, are being bu to supplement existing water-storage fac ties at Springfield, Mass. The walls of t tanks were wound with more than 1,0 wraps of prestressing wire to withstand t lateral forces exerted by the water. Ea tank will hold 15½ million gallons. P stressing was handled by The Preload C New York, N. Y. The tanks are owned the city of Springfield.

Publicity committee for 1963 CIMA exhibit

■ The publicity committee for the Construction Equipment Exposition and Road Show to be produced by the Construction Industry Manufacturers Association at the International Amphitheatre, Chicago, in February, 1963, is headed by chairman Donald V. Buttenheim, president of CIMA and president of the Buttenheim Publishing Corp., and co-chairman Harvey A. Scribner, of Russell T. Gray, Inc.

Members of the committee are: J. T. Jenkins, Jr., American Road Builders' Association; J. M. Sprouse, Associated General Contractors of America; G. M. Reveire, International Road Federation; A. A. Faber, Associated Equipment Distributors; J. A. Wicke, Iowa Mfg. Co.; M. P. Jaeger, Koehring Co.; M. L. Crawford, The Frank G. Hough Co.; H. Kenyon, Andrews Agency; D. L. Cronk, Highway Information Service; and George Stewart, publisher, *Constructioneer*.

Reutter firm moves

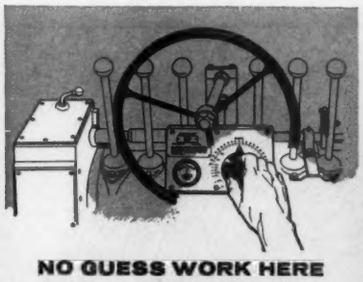
■ John G. Reutter Associates, consulting engineering firm of Camden, N. J., recently moved its offices to 729 Federal St. The new facilities, providing more than 5,000 square feet, are nearly double those at the previous location.

The company is beginning a tellurometer system and service, an electronic technique for making quick and accurate distance measurements in all terrains and under most weather conditions.

Asphalt Institute plans to resume summer seminar

■ The Committee on Educational Aid of The Asphalt Institute, College Park, Md., is planning to reinstate the institute summer asphalt seminar program on a continuing basis in 1962.

The original 5-year pilot program, a series of 6-week courses for engineering professors and instructors, was introduced in 1956. Engineering schools that have cosponsored the series include Purdue, University of California, Texas A. & M., Cornell, and the University of Minnesota. Each seminar has been limited to 16 or 20 college engineering teachers who received grants-in-aid through The Asphalt Institute and the American Petroleum Institute. The Asphalt Institute plans to assume sole support of the new program.



NO GUESS WORK HERE

Quad City Construction's 660 POWER-Flow grader with Dial-A-Slope blade control spreads sub-base to exact specifications. By doing *automatically* the important job of maintaining the desired transverse slope, Preco blade control makes operator's job easier — permits fast, accurate work!

LW

Grader with automatic blade control sets pace for fast paving schedule

On any of today's road jobs, you're likely to run into the same problem Quad City Construction Co., of Rock Island, Ill., did in building 2.4 miles of four-lane Rt. 24 near Quincy. With 56,371 sq yards of 8" concrete to lay, Quad City needed a fast, accurate machine for final-grade work — to keep far enough ahead of pavers for efficient, speedy operation.

Quad City's choice: a LeTourneau-Westinghouse POWER-*Flow*® 660 grader with Preco Dial-A-Slope automatic blade control. And this choice was a good one: the 190-hp torque-converter machine worked faster than another type grader formerly used . . . stepped up paving schedule . . . substantially reduced operating time and costs. Here's why:

Smooth, accurate control

The LW blade mechanism is firmly mounted on the heavy-duty circle for chatter-free operation. Strong T-shaped drawbar gives firm circle support for accurate control. And with Preco Dial-A-Slope blade control *automatically* maintaining desired transverse slope, operator is free to concentrate on his reference line. Result: he gives you a finished grade in up to *50% less* time!

We will give you complete details on LW graders . . . 85 to 190 hp. Preco Dial-A-Slope blade control — one of 7 attachments available — can be installed easily in a few hours on any new or used current model LW grader. Ask for a demonstration.

ANOTHER SATISFIED USER

of LW grader with Preco blade control is Calumet Paving Co., of Indianapolis, Ind. Here, "660" blades sand base-material along edge of concrete strip. Contractor used a guide wheel that rolled along edge of pavement. Preco controlled slope to accurate specs.

G-2354-DCJ-1

LW

LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOI

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Avoid legal pitfalls

Supplier's right to sue on bond

THE PROBLEM: *A federal-housing-project contractor gave a statutory bond for the payment for all materials furnished the contractor for the job. A supplier knew from the terms of a purchase order that the materials were to be used on the project but was not specifically informed that a bond had been given.*

Under state law, a supplier could collect on the bond even if not named in it as beneficiary.

Was the supplier entitled to sue on the bond?

THE ANSWER: Yes. (American Surety Co. of New York, appealing Defendant v. United States of America for use of Frigidaire Sales Corp., Plaintiff, 282 Fed. 2d 427, decided by the United States Court of Appeals, First Circuit.)

Upholding a decision by the United States District Court for the District of Massachusetts, the court ruled that the supplier was presumed to have known that the bond required by law had been given and that it required payment for supplies furnished.

Contractor's claim to extra pay denied

THE PROBLEM: *A public-housing contractor sought extra pay for reinforcing certain concrete slabs with wire mesh. There was an obvious error in the specifications as to requirement for reinforcement, but the contractor, in bidding, made no inquiry as to what was intended. Was the contractor entitled to extra pay?*

THE ANSWER: No. (Anthony P. Miller, Inc., v. Wilmington Housing Authority, 184 Fed. Supp. 273, decided by the United States District Court, District of Delaware.)

The court said that an assumption that no wire-mesh reinforcement was contemplated by the specifications and drawings was unwarranted, and that the contractor could not base its claim upon its own carelessness or misjudgment.

Insurer loses suit against subcontractors

THE PROBLEM: *On the facts presented, did a general building contractor's liability insurer have a right to compel a concrete subcontractor and a steel subcontractor to reimburse it for damages paid an employee of the latter on account of injury sustained on the job?*

THE ANSWER: No. (Employers Mutual Liability Insurance Co. v. Di Cesare & Monaco Concrete Construction Corp., 194 N.Y. Supp. 2d, 103, decided by the New York Supreme Court, Appellate Division, First Department.) The court decided:

Where concrete footings for the building had been provided by a concrete subcontractor before the steel subcontractor came onto premises, and it was contemplated that footings would be integrated with steelwork, and an experienced steelworker could readily observe that there were no anchor bolts, that footings presented an uneven surface, and that no shoring had been provided to keep steel columns in place, footings did not become a place to work under control and supervision of the general contractor, and they became dangerous only through manner of their use. The general contractor either had no liability to the injured steelworker or, if the negligence lay in a defective over-all plan that subcontractors were merely carrying out, the general contractor was actively negligent. In either event, the general contractor's insurer was not entitled to reimbursement for moneys paid in settlement to the injured steelworker.

Bidding was void

THE PROBLEM: *A New Jersey borough called for bids on a sewer job. Thirty-five items of work were involved, and for 34 of these items bids were called for at unit prices for estimated quantities of work. The thirty-fifth item covered rock excavation estimated at 2,100 cubic yards and the bidding spex fixed the unit price at $20 per yard. So there was no competition on that item. Was a taxpayer entitled to enjoin award of the contract to the low bidder?*

THE ANSWER: Yes. (Armaniaco v. Borough of Cresskill, 163 Atl. 2d 379, decided by the New Jersey Superior Court, Appellate Division.)

The court ruled (1) that the low bid was not invalid as being unbalanced although it was nominal as to three minor items—timber sheet-

ing to be left in place, and two items of trench. Each bid was required to state a total price computed by multiplying estimated quantities by the unit prices bid. (2) But the bidding on the total price was void because the bidding spex prevented any competition as to rock excavation, the price have been fixed at $20 per yard.

Low bidder loses suit

THE PROBLEM: *A statute required that a building contract be awarded to the lowest responsible bidder. All bids were rejected, and on new bidding the contract was awarded to another bidder whose bid was lowest. Did the low bidder on the first call for bids have a valid claim for award of the contract or for damages against the district and the engineering company on whose advice the original bids were rejected?*

THE ANSWER: No. (R. S. Noonan, Inc., v. School District of City of York, Pa., 162 Atl. 2d 623, decided by the Pennsylvania Supreme Court.)

The court noted that it was significant that no taxpayer had sued to compel an award of the contract to the plaintiff. It was also important that the original bids were received under notice that any and all bids might be rejected and new bids called for. The engineering company's relationship to the district by which it was employed was of such nature that the company's advice that all the original bids be rejected could not be regarded as a malicious and actionable interference with the plaintiff's business.

Contract was not binding

THE PROBLEM: *A state highway contractor asked a subcontractor to bid on bridge and culvert construction. The subcontractor submitted to the prime contractor a proposed draft of a subcontract which the latter returned after striking out certain provisions and signing the contract as so changed. The subcontractor complied with the prime contractor's request for a copy of the proposed contract as so changed, but did not manifest consent to the changed conditions of the contract. Was a binding subcontract formed?*

THE ANSWER: No. (Lizza & Sons, Inc. v. D' Onfro, 282 Fed. 2d 175, decided by United States Court of Appeals, First Circuit, upholding a decision to the same effect by the United States District Court for Massachusetts.)

It was also decided that the fact that a surety company had issued performance bonds reciting that a contract had been entered into was not binding on the proposed subcontractor.

Damage from floods deemed not accidental

THE PROBLEM: *A gravel company carried insurance against liability for accidental injury to property. The company constructed a loading ramp extending from its plant to nearby railroad tracks. The ramp crossed an arroyo that was usually dry but that flooded during rainy seasons. The ramp obstructed unusual but not unprecedented flooding of the arroyo, damaging nearby property. Was the damage "accidental" within the coverage of the policy?*

THE ANSWER: No. (Albuquerque Gravel Products Co. v. American Employees Insurance Co., 282 Fed. 2d 218, decided by the United States Court of Appeals, Tenth Circuit, upholding a decision to the same effect by the United States District Court for New Mexico.)

The court ruled that the insurance company justifiably refused to defend a suit brought against the gravel company by the owner of the damaged property. This required the gravel company to defend at its own expense the charge that it had caused plaintiff's damage by negligently obstructing the flow of water through the arroyo.

Contractor trespassed on adjacent property

THE PROBLEM: *The low bidder on a highway widening project, without waiting for signing of a contract, began work and cleared shrubbery from a strip embraced by the project. The highway department had not yet acquired the right to use the strip, the owner having appealed from a con-*

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

NEW SUPER-TOUGH ANSWER FOR TRUCK-KILLING JOBS!

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...'s what you get: **1** Heavy-duty 4,000-lb. torsion bars up front, ...ted right at the frame K-brace crossmember for sturdy support. ...ers are truss-rod-connected under the frame for an extra margin of ...gth.) **2** Massive K-brace crossmember between the torsion bar ..., specially designed for maximum structural rigidity and fabricated ...gh-tensile-strength steel. **3** Extra-heavy side rails, of full quarter-... stock, with full-length L-plate reinforcements. **4** Heavy-gauge ...tube-jaw crossmembers in frame midsection that combine high strength ... give-and-take resilience. **5** A massive tubular crossmember, ...ted in extra-heavy cast steel brackets at the rear spring front hangers. ...Maximum-duty 11,500-lb. rear springs of standard variable-rate design, plus the extra margin of 2,000-lb. auxiliary springs. And **7** a massive double channel crossmember at the spring rear hangers heavily gusseted fore and aft—the finishing touch of rock-ribbed ruggedness between roughest roads and heaviest loads.

If yours is a truck-killing job, this new option is tailor-made for you. You can get it on any of four medium- and heavy-duty models to match your needs best, and you'll be surprised at how little it costs. See your Chevrolet dealer right away for full details. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

Availability: Heavy-Duty Off-Road Chassis Equipment

Model	Wheelbase	Cab-to-Axle	Max. GVW	Front Suspension Capacity	Rear Axle Capacity
C6303	157"	84"	19,500 lbs.	5,000 lbs.	15,000 lbs.
C6503	175"	102"	19,500 lbs.	5,000 lbs.	15,000 lbs.
C7303	157"	84"	23,000 lbs.	7,000 lbs.	16,000 lbs.
C7503	175"	102"	23,000 lbs.	7,000 lbs.	16,000 lbs.

...961 CHEVROLET STURDI-BILT TRUCKS CHEVROLET

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avoid legal pitfalls

(Continued from preceding page)

demnation award of compensation on the ground that the award was inadequate. The owner sued the contractor for damages and was awarded $200 for actual damages and $1,000 punitive damages. Was the award valid (1) as to actual damages and (2) as to punitive damages?

THE ANSWER: (1) No. (2) Yes. (Hinson v. A. T. Sistare Construction Co., 113 S.E. 2d, 341, decided by the South Carolina Supreme Court.)

The court said that premature uprooting of the shrubbery caused no money loss to the owner because he was compensated for the shrubbery in the condemnation proceeding. But punitive damages—an award for willful trespass on the land before the highway department had completed its condemnation—was upheld. The Supreme Court noted that when a trespass is merely negligent, punitive damages are not assessable; the trespass must be willful and deliberate.

Oral agreements

THE PROBLEM: *When a building contract specifies that changes in work or extras shall be covered by written orders, is the owner liable for extras furnished on oral orders?*

THE ANSWER: Yes. (Von Lanendorf v. Riordan, 163 Atl. 2d 100, decided by the Connecticut Supreme Court of Errors.)

Determining rights of negligent parties

THE PROBLEM: *A contractor's employees rendered a highway slippery by negligently dropping dirt, clay, and mud on it. The driver of a truck carelessly driving over the slippery road struck an automobile, causing death to one passenger in the car and injury to another. The truck was covered by liability insurance, and the insurance company settled claims on account of the death and injury of the automobile passengers, taking a release that precluded any claim on that account against the contractor.*

Did the insurance company have a right to compel the contractor to reimburse it, as liability insurer of the truck, for half of the amount for which the insurance company became liable, because the accident resulted from joint negligence of the contractor in rendering the road slippery and negligence of the driver of the truck in failing to drive carefully on the slippery road?

THE ANSWER: Yes. (Hawkeye-Security Insurance Co. v. Lowe Construction Co., 99 N.W. 2d, 421, decided by the Iowa Supreme Court.)

Legal status of roads under construction

THE PROBLEM: *A highway contractor's employee was driving a truck on a road under construction and not open to travel. He was killed in a collision with an automobile at an intersection with a public highway that was open to travel. The driver of the automobile was sued for damages. The trial judge, in instructing a jury, treated the case as if it involved the right-of-way of vehicles at intersecting public highways. Did the judge err?*

THE ANSWER: Yes. (Curtis v. Lawley, 346 Pac. 2d 579, decided by the Colorado Supreme Court.)

The decision was based on these statutory definitions: A public highway is defined as "(a) the entire width between the boundary lines of every way publicly maintained when any part thereof is open to the use of the public for purposes of vehicular travel; or (b) the entire width of every way declared to be a public highway by any law of this state." A private roadway is defined as "every road or driveway not open to the use of the public for purposes of vehicular travel."

The court said that statutory rules of the road for public highways are inapplicable to private roadways and are designed to govern traffic upon highways that are prepared for use as such, for public convenience and safety. These rules are applicable only to permanent lines of travel. They do not apply to parts of a road under construction, where changing conditions would not permit orderly travel under established rules.

Contract signatures

THE PROBLEM: *After a contract has been signed by one of the parties, duplicate copies were delivered without the signature of the other party. He signed his copy later. Could he enforce the contract against the other party?*

THE ANSWER: Yes. (Dennis v. Overholtzer, 3 Cal. Rptr. 193, decided by the California District Court of Appeal, Third District.)

The court cited the general rule of the law that alteration of the wording of a written contract in an important respect by one party after delivery of the contract invalidates the contract at the option of the second party if it did not consent to the change. But this does not apply to mere delay by one of the parties in signing. The case suggests that expensive litigation may be avoided by seeing to it that both copies of a contract are properly signed before they are delivered.

"...nothing like a UNIT for low upkeep"

—H&W CONSTRUCTION CO.
MORTON, WASHINGTON

Specializing in road building, the H&W Construction Co. uses a 5/8-yd. Model 617 shovel to load all its road surfacing material. The UNIT feeds the company's crusher, handling approximately 450 yards of material per day, and, in addition, loads out all trucks. The owners have this to say: "There's nothing like a UNIT for LOW UPKEEP. We've run ours four years with less than $100 repairs expense, and have run it steady, too."

Low upkeep naturally results from UNIT advanced design. For one thing, UNIT gives you the industry's *only* one-piece main machinery gear case. All gears, shafts, and bearings are completely enclosed in a constant oil bath. Flawlessly sealed at every point, this case keeps lubricants in — dirt and abrasives out!

Advanced design carries over to component parts, too. *All* spur and bevel gears, worm drives, and rollers are forged for uniform toughness. Shafts are involute splined for greatest strength. Gears, shafts, and many other essential working parts are scientifically heat-treated; wear surfaces are flame-hardened for longer life.

Why not take time out to talk to the owner and operator of a UNIT in your area. See how often LOW UPKEEP and HIGH PRODUCTION pop up during the course of your conversation. Then, get in touch with your local UNIT distributor ... let him give you all the facts!

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SHOVELS: ½ Yd. to 1 Yd. • CRANES: 5½ Ton to 21 Ton • DRAGLINES ½ Yd. to 1 Yd. • TRENCHOES: ½ Yd. to 1 Yd. • TRUCK CRANES: 10 Ton to 40 Ton

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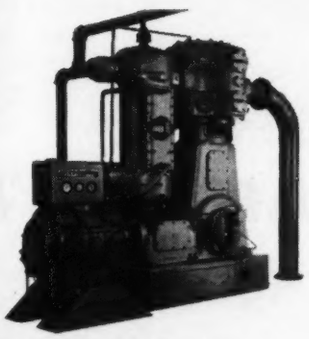

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What's your compressor requirement? Need an installation large enough to provide air for all your needs? Or would a small, compact unit for auxiliary operation solve your immediate problem? Either way—and for a wide range of applications between these extremes—Atlas Copco has the compressor for you!

No matter which you choose, you'll get these proven advantages from Atlas Copco:

(1) More air per horsepower—less power consumption than other comparable units!

(2) Really low maintenance (one example—$310 after 10,000 hours' operation)!

(3) Specifications are guaranteed free-air delivery—you get exactly what you order!

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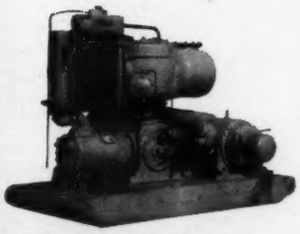
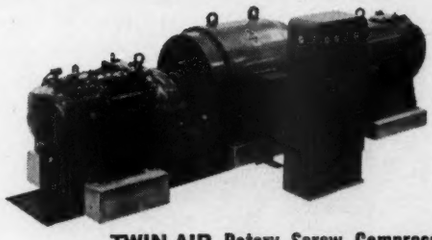


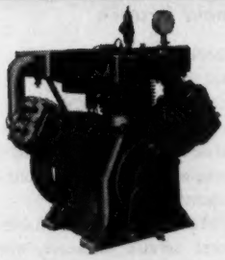
AR-L Heavy-Duty Compressors

Same basic construction as the AR Series, but provided with an air-cooled intercooler and air-cooled radiator for the cylinder water. Fan on compressor flywheel cools radiators. Perfect for arid areas or where difficult to bring in water. Both stationary and skid-mounted models available.



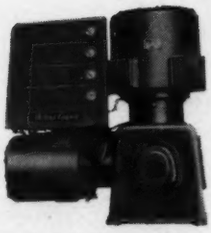
TWIN-AIR Rotary Screw Compressors

Brand new! "Twin-Air" Compressors offer capacities from 6,900 to 19,400 cfm at working pressures up to 115 psi. And, you get completely *oil-free* delivery of air or gas, since no lubrication is required — timing gears maintain small clearances between precision-mounted rotors, eliminating friction (and the necessity of oil) in compression chamber.



CT Air-Cooled Compressors

Stationary, or skid-mounted compressors for use where air demand is between 50 and 300 cfm. Totally air-cooled. Cylinder arrangement designed for smooth, vibration-free operation. Compact, rugged—for continuous, 24-hour trouble-free service. Highly efficient; low on maintenance costs.



ER-6 Heavy-Duty Compressors

New! Fundamental improvements over conventional heavy-duty compressors reduce power requirements (18.3 hp/100 cfm at 100 psi, full load); provide totally enclosed design; and save on floor space. Capacities to 1,140 cfm; standard instruments and safety devices.

ATLAS COPCO, INC.
Dept. CAE-5

Gentlemen:
Please send me ☐ Short-form catalog ☐ Detailed information on the____Series

Name_____ Title_____

Firm_____

Address_____

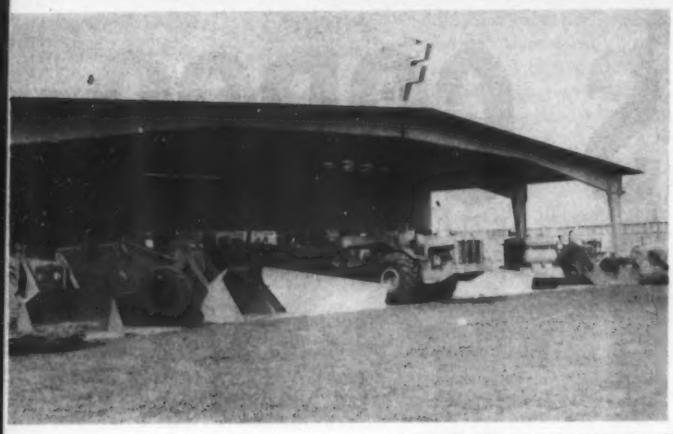
City_____ Zone____ State_____

Atlas Copco

610 Industrial Avenue
Paramus, New Jersey
COlfax 1-6800

930 Brittan Avenue
San Carlos, California
LYtell 1-0375

For more facts, use coupon or Request Card at page 18 and circle No. 305



With the front wall of its new headquarters building set back 40 feet, a striking display area—lighted at night—is created for Dukehart-Hughes Tractor & Equipment Co., Des Moines. The building is a 100 × 240-foot clear-span all-steel structure with double masonry walls. Behind the scenes, a hard-working staff makes the dealership a successful one.

Distributor Doings

Firm wins efficienc

Contractors and Engineers staff article

In these days of profitless prosperity, many dealers are wondering how to make management more efficient—or how to get less people to do more work without being a Simon Legree.

The men at Dukehart-Hughes Trac-

Koehring California names distributor

Koehring Co. of California, Stockton, Calif., has appointed Cooper Equipment Co., 8723 Broadway, San Antonio, Texas, a distributor for its line in southern Texas.

The new distributor will handle sales and service on KO-CAL products—asphalt paver feeders, windrow sizers, and water haulers.

Midwest dealer moves

Mid-West Concrete Form Co., exclusive Chicago-area sales agent for Simplex-Waco concrete forms and accessories, has moved from Shiller Park to 9822 Belmont, Franklin Park, Ill.

Euclid distributor opens new branch

Harris Euclid, Sioux Falls, S. Dak., a distributor for Euclid Division, General Motors Corp., Cleveland, has opened a branch in Rapid City, S. Dak., to serve the western counties of that state and twenty-nine counties in eastern Montana.

Sterling H. Degner is manager, E. L. Becker service manager, and Roger Harris parts manager of the new branch, located at Deadwood Avenue and Interstate 90, Rapid City.

New dealer for Hyster

The Hyster Co., Portland, Ore., has appointed Monarch Motors Co., Inc., N. Meridian and Eleventh Sts., Indianapolis, Ind., a dealer for its Industrial Truck Division throughout Indiana, with the exception of a 4-county area in the northwest corner of the state and the counties bordering on Ohio and Kentucky.

Monarch maintains complete facilities for Hyster lift trucks, Straddle Truck carriers, and Karry Krane mobile yard cranes.

Huber-Warco appoints

The Huber-Warco Co., Marion, Ohio, has named the O. B. Avery Co., Inc., 1325 Macklind Ave., St. Louis 10, Mo., a distributor for its motor graders, maintainers, and 3-wheel and tandem rollers in southern Illinois and eastern Missouri.

ANY WAY YOU FIGURE IT . . "

GM GENERAL MOTORS EUCLID

EUCLID

FOR MOVING EARTH, ROCK, COAL AND ORE

along with loyalty

tor & Equipment Co. in Des Moines, Iowa, haven't really spent too much time scratching their heads about this industry-wide problem. They've been too darned busy working. Everybody from the custodian to the president pitches in to get the daily work done.

Here's an example of operating efficiency—or just plain hard work, whichever you choose to call it. In April of 1958, the company moved from downtown Des Moines to new headquarters on the outskirts of the city. Over the next two years, the volume of business increased by about 20 per cent. To handle the expansion in business at the larger headquarters, only two servicemen and an office girl were added to the force. At the present time, 32 workers (including company officers) handle between $2.5 and $3 million worth of work each year. As the Allis-Chalmers dealer in central Iowa, Dukehart-Hughes sells primarily excavating and road-building equipment.

President C. J. Dukehart, 76, sets the example for the staff by helping out in departments that are particularly busy. Right here, he's helping to get out a mailing. The founder of the company is at work by 7 every morning.

Everybody helps

It's difficult to pin down exactly why the company is able to get a lot of work done with comparatively few people. As Tom Hughes, the company's energetic vice president, sees it, "We are a small, friendly organization. We work together. Since each of us knows something about the other man's job, we can help him out when necessary. When our bookkeeper is sick or on vacation, our secretary-treasurer takes over the additional work. When the parts department is overloaded with work, I sometimes go in and give them a hand.

"Of course," Mr. Hughes continues, "you have to have good men to start with. We look men over very carefully before we hire them. Then, we train them well. Because they generally like it here, they stay with us for many years. Experienced men who like their jobs can put out a lot of work."

Says Mrs. J. D. McKean, who's worked in the parts department for 18 years: "At least part of the reason for our ability to work well together is an intense sense of loyalty to our president, Mr. Dukehart. You know,

(*Continued on next page*)

Incoming parts are unpacked and placed on a 4-wheel dolly to be taken to their appropriate sections in the parts-storage area.

"Euc" Rear-Dumps are your best investment

Reliable job-proved performance, backed by competent and well stocked dealer parts and service facilities, makes "Euc" Rear-Dumps your best bet for top production at lowest over-all cost.

There are lots of ways to compare hauling equipment but no matter what method you use there's only one real measure — reliable performance on the job.

For over 25 years Euclid Rear-Dumps have been the outstanding choice of contractors, mines, quarries and industrial users of off-highway haulers. More than half of the orders for new "Eucs" are from previous owners — repeat business that is the best evidence of customer satisfaction with the product and the service available from Euclid dealers.

With this unequalled field experience and continuous product improvement, "Eucs" give you operating advantages that cut downtime and provide greater work-ability. An experienced dealer organization with complete parts stocks and service facilities is further assurance that your "Eucs" can always be kept in top shape wherever they may be working.

You can depend on "Eucs" and your Euclid dealer for bonus benefits that don't show in the specs but are mighty important in making Euclids your best investment.

EUCLID Division of General Motors, Cleveland 17, Ohio

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

Euclid pioneered many of the rear-dump features that are "standard" today . . . free floating springs, planetary type final drive, exhaust heated bodies, Torqmatic Drive with torque converter and semi-automatic transmission, double acting hoist and other engineering advances that cut hauling costs.

For more facts, use Request Card at page 18 and circle No. 306

Jim Sharpe, left, sales manager for Dukehart-Hughes, discusses a prospect with Des Moines territory salesman John Graff.

R. E. Hewitt, right, secretary-treasurer of the company, consults vice president T. E. Hughes in his office about the day's business.

(*Continued from preceding page*)

he started the company back in 1907. He's a grand man who takes care of the people who work for him."

The sales department is a hustling outfit that doesn't waste any time sitting on eggs that won't hatch. Says sales manager Jim Sharpe: "We try to train our salesmen to make good use of their time. We impress on them that they should spend their time as carefully as they would their money. I often go out and ride with new salesmen to show them how to budget their time."

New headquarters

Some of the company's working efficiency can be attributed to its pleasant and convenient headquarters on the northern outskirts of Des Moines.

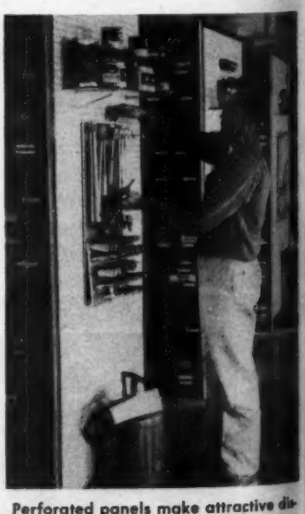
On the 10-acre site there is plenty of room for customer and employee parking, and for the display of new and used equipment. At the rear of the site is a 5-acre plot where contractors can try out equipment. If a contractor wants to know how a certain 3-year-old dozer works, he can take it out on the testing ground and push around some dirt. This try-before-you-buy selling has proved very effective.

At the rear of the site is an all-steel 40 × 100-foot building for steam cleaning and spray painting. Because of the unpleasant exhaust fumes, it is situated some distance from the main building.

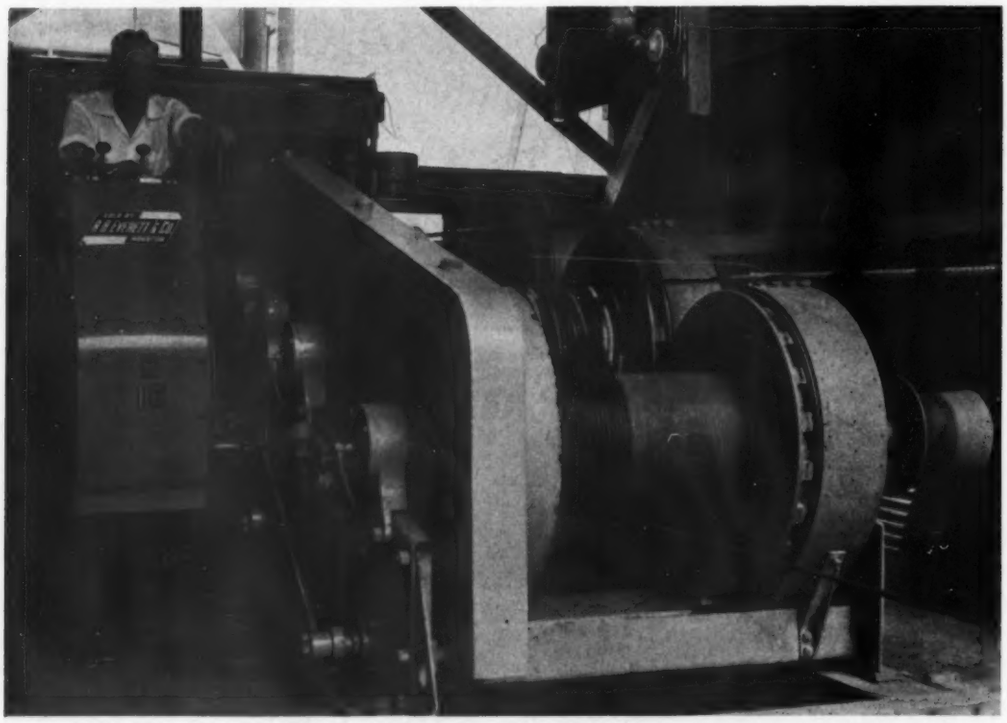
The $200,000 main headquarters building is a clear-span 100 × 240-foot steel-frame building with skylighted steel roof and double masonry walls. The steel columns of the Butler building rest on 2-foot-high concrete pedestals to gain extra height for servicing of king-size equipment.

Striking display area

The front canopy of the building makes a striking display area for new equipment. In this type of clear-span building, the display area is simply constructed by moving the front exterior wall back about 40 feet. This



Perforated panels make attractive display areas at the ends of the five banks of the parts-storage bins.



with Safety and Accuracy . . .

Clyde Hoist makes "deposits" at Houston's First City National Bank

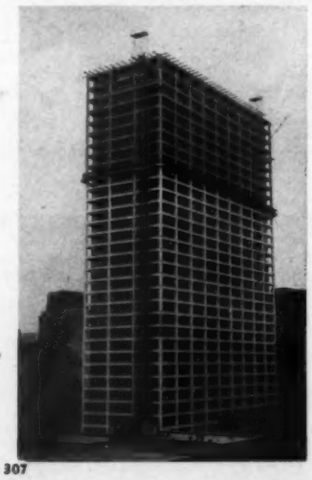
A major portion of the construction materials 'deposited' in the First City National Bank were speedily spotted with this Clyde Frame-6 Hoist . . . hoists noted around the world for dependable, efficient service.

Clyde's reputation is born of many 'plus' features that permit operator to hoist and spot loads with ease and accuracy. Large diameter, extra-capacity brakes handle maximum loads by light toe action. Clyde's internal expanding, band friction clutches give smoother, more positive full-load service.

Comparison of construction features shows why Clyde Hoists have had a reputation for superiority for more than half a century! All steel bed and side frames, high strength spur gears, anti-friction bearings throughout are but a few of the many extra values built into all Clyde Hoists . . . from 3,000 to 80,000 pounds line pull.

There is a Clyde Hoist to fit your requirements . . . to exceed your expectations! Send for Hoist Bulletin 34.

The 32 story First City National Bank adds an impressive landmark to the Houston skyline. Contractor; W. S. Bellows Construction Corp.



CLYDE

A SUBSIDIARY OF RIC

CLYDE IRON WORKS, Inc.

Established 1899
DULUTH 1, MINNESOTA

HOISTS : DERRICKS : WHIRLEYS : BUILDERS TOWERS
UNLOADERS : CAR PULLERS : ROLLERS

For more facts, use Request Card at page 18 and circle No. 307

leaves the equipment under roof, but not enclosed. At night, the equipment is put under lights to attract the attention of passing motorists.

Floor-to-ceiling windows separate the display area from the 40 × 100-foot office and customer reception area. This contains seven individual offices and a parts counter.

Immediately behind the office and reception area is the parts-storage space. Containing five double banks of steel bins, it occupies 80 × 100 feet. Adjoining the storage space is the 80 × 100-foot shop. Its roomy, well lighted work area is served by four equipment doors at the rear of the building.

Because the building is set on pedestals, the designers were able to fit in two second-floor rooms above the office area. These provide convenient space for group meetings.

In the new and much larger headquarters, getting in touch with key personnel was a problem. A telephone system with a central switchboard was not adequate, since company officers were often out of their offices. For a better communications setup, the company put in a one-way public-address system. With the system, the switchboard operator can call various areas in or outside the building to locate the desired party.

Dukehart-Hughes has not always had such ideal facilities. Back in

(*Continued on next page*)

Spray painting and steam cleaning are done in a Butler steel 40 × 100-foot building. Strong exhaust fans pulls out the paint vapors as a workman sprays a dozer blade.

An American Bosch fuel-injection calibrating stand is used by Pete Yochum, shop foreman, to check out a pump.

For more facts, use Request Card at page 18 and circle No. 308 ▶

A 5-acre area at the rear of the headquarters gives contractors a chance to try out equipment they are thinking of buying. This used Allis-Chalmers HD-11 is being put through its paces by a customer.

REBUILDS TRACKS WITH VICTOR REBUILDER

for 1/3 the cost of new ones...

Victor TLM-2 track link rebuilder automatically hardfaces both sides of track simultaneous

Victor DEMS roller and idler rebuilder mounts 8 rollers, advances from one roller to next between passes, thus preventing excessive heat build-up.

"New rails for a TD-24 cost about $2200.00, but with our Victor track link rebuilder we can recondition a worn set to 90% as good as new for $750.00," reports Allied Equipment Company, International Harvester dealer, Fresno, Calif. Speed helps to make these savings possible. "With our Victor, one man can rebuild a TD-14 track in 6 hours, floor-to-floor time—that's 5 times faster than non-automatic equipment."

Allied Equipment Company also uses Victor roller and idler rebuilder, roller and idler grinder, and flux grinder—all manufactured by L & B Welding Equipme Inc., a wholly-owned Victor subsidiary, a sold only under the Victor name.

INVESTIGATE VICTOR TRACK REBUILDING NOW

Whether you're a dealer or contractor, y can profit from Victor automatic rebui ing machines — and Victor continuo coil, hardfacing wire, developed expres for use with automatic rebuilders. F complete details, call your Victor weldi dealer, or write us today for descript literature.

VICTOR for hard acing

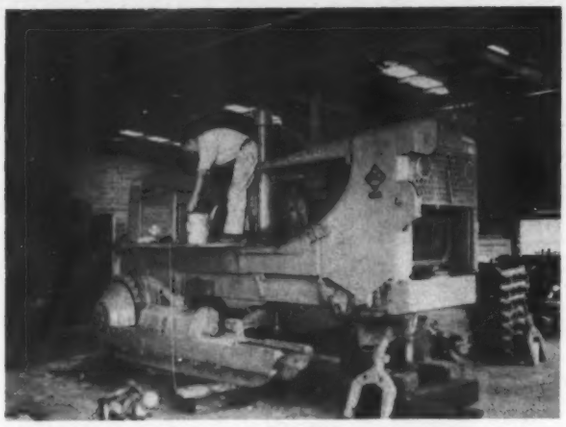
VICTOR EQUIPMENT COMPANY

844 Folsom St., San Francisco 7 • 3821 Santa Fe Ave., Los Angeles 58

1145 E. 76th St., Chicago 19

J. C. Menzies & Co., Wholly-Owned Subsidiary

MFRS. OF HIGH PRESSURE AND LARGE VOLUME GAS REGULATORS; WELDING & CUTTING EQUIPMENT; HARDFACING RODS; BLASTI NOZZLES; COBALT & TUNGSTEN CASTINGS; STRAIGHT-LINE AND SHAPE CUTTING MACHINES; ROLLER AND IDLER REBUILDING MACHI



There's plenty of room for mechanics and shop equipment to work on rigs in the 80 × 100-foot shop area. These servicemen are installing a new set of tracks on an HD-16.

(Continued from preceding page)

1907, the company started out in cramped, dimly lit quarters in downtown Des Moines. Founded by C. J. Dukehart as the Dukehart Machinery Co., the firm sold threshing machines, steam engines, corn shellers, and sawmills. In 1908, R. W. Hughes became a partner in the young but growing organization.

As the construction industry grew, the company gradually shifted its lines from farm implements to construction equipment. In 1935, the Dukehart-Hughes Tractor & Equipment Co. was formed. The firm was incorporated in 1948 with C. J. Dukehart as president, R. W. Hughes as vice president and treasurer, and R. E. Hewitt as secretary. In March of 1955, R. W. Hughes retired from the business and his son, T. E. Hughes, became vice president.

C. J. Dukehart, at 76, is still president and remains very active in the organization. Rain or shine, he's in his office at seven o'clock every workday morning. As he always has in the past, he prefers to type his own letters. When a contractor gets a letter from "Duke," he knows it's straight from the boss's typewriter.

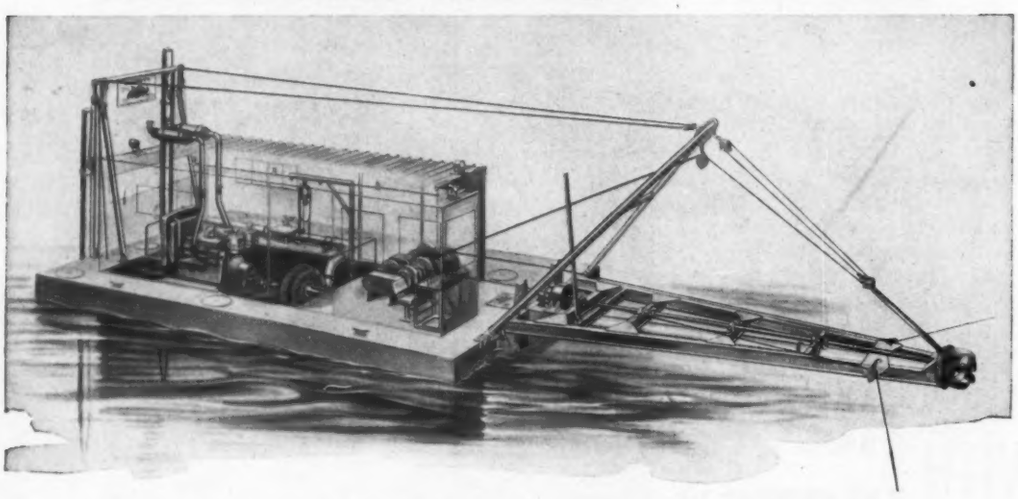
The sales department is headed by J. E. Sharpe. He directs the activities of seven salesmen who cover 44 of Iowa's 99 counties. He also handles walk-in sales of new and used equipment.

The company sells the construction equipment of 24 different manufacturers. These include Allis-Chalmers Mfg. Co.; Harnischfeger Corp.; Ezaick Mfg. Co.; Union Wire Rope Corp.; Seaman-Gunnison Corp.; Gar Wood Industries, Inc.; Warner & Swasey Co.; Transport Trailers, Inc.; and Chicago Pneumatic Tool Co.

Service manager Verl Thornton supervises the work of nine shopmen and five fieldmen. Pete Yochum is the shop foreman. Parts manager is H. H. Sumption, and company accountant is H. E. Kesler.

From the heads of departments to the mechanics in the field, each man in this firm takes pride in his work. He works hard at his own job, and when necessary he helps out his fellow worker. That's probably the main reason why Dukehart-Hughes is able to get so much done with so few men. THE END

The Most Advanced Dredges In Their Class



Ellicott "Dragon"® Model Portable Dredges

Here's why:

1. These are dredges in which portability is a reality not a possibility. *Patented* 2-piece hull disassembles quickly and can be reassembled on shore or in the water.
2. All components are designed and built by Ellicott whose centralized engineering and manufacturing responsibility insures quality control.
3. "DRAGONS" are completely electro-hydraulically operated with unified controls to facilitate handling ease, lessen operator fatigue and raise outputs. *This kind of control was first introduced by Ellicott on portable dredges over 10 years ago.*
4. All precision machinery easily accessible for servicing. Eliminates costly delay in maintenance of vital operating components.
5. "DRAGONS" are products of experience gained by a company which has concentrated on designing and building dredges of all types and sizes for 75 years. This know-how unequalled by any other dredge builder.

These and other exclusive Ellicott designed features spell out why today's rugged durable "DRAGONS" are recognized everywhere to be top performers as proved by their work on road construction, land reclamation, industrial pond clearance and waterway maintenance. To find out more about them, their accomplishments and how one is suitable for your construction operations, write for Bulletin 980.

Please fill in the handy coupon.

ELLICOTT DREDGES

ELLICOTT MACHINE CORPORATION, Baltimore 30, Maryland, U.S.A.; Ellicott-Brandt, Inc., Baltimore, Maryland; Ellicott Fabricators, Inc., Baltimore, Md.; McConway & Torley Corp., Pittsburgh, Pa.; Timberland-Ellicott, Limited, Woodstock, Ontario, Canada; Dragues Ellicott France, Paris, France; Dragas Ellicott do Brasil Ltda., Rio de Janeiro, Brazil; Ellicott de Mexico, Mexico City, Mexico.

Successors to the floating dredge business of the Bucyrus-Erie Company and the American Steel Dredge Co. Complete engineering, design and construction service.

ELLICOTT

ELLICOTT MACHINE CORPORATION
1609 Bush Street • Baltimore 30, Maryland

Send me a copy of Bulletin 980, describing "DRAGONS," "The Ultimate in Portable Dredge Engineering."

Name_____

Firm_____

Address_____

City_____ Zone____ State_____ 2784

For more facts, use coupon or Request Card at page 18 and circle No. 309

C. S. Johnson names

C. S. Johnson Co., Champaign, Ill., has appointed Equipment & Supplies, Inc., 540 Delwar Road, Pittsburgh, a distributor for the eastern two-thirds of Pennsylvania.

The new dealer will handle sales and service on the complete line of C. S. Johnson batching plants and equipment, clamshell and concrete buckets, electronic controls for automating batch plants and concrete pipe and block plants, and Koehring-Johnson construction mixers. Equipment & Supplies has a branch office located at 485 E. Main St., Bradford, Pa.

Three new dealers named by Universal

Universal Form Clamp Co., Chicago, Ill., has named the following new distributors for its line of concrete forms, form ties, and concrete specialties: Southern Spanall, Inc., Fort Lauderdale, Fla.; S. J. Frazier, Seattle, Wash.; and Spanall of the Southeast, Inc., Durham, N. C.

PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

All-purpose vehicle for men and cargo

The Scout, a new, small all-purpose vehicle for transportation of passengers and cargo, has been introduced by the Motor Truck Division of the International Harvester Co.

Offered in 2 or 4-wheel-drive models, it includes a 3-person passenger compartment with removable steel top, 5-foot-long pickup body, fold-down windshield, removable door glass, removable doors, and a new International Comanche 4-cylinder engine as standard equipment. A full-length 1-piece steel Travel-Top that encloses both operator compartment and body is optional.

Over-all length of the Scout is 12 feet 10 inches. Wheelbase is 100 inches.

Front-axle capacity at the ground is 2,000 pounds. Rear axles are rated at 2,300 pounds.

Write to the Motor Truck Division of the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 90.

Crawler backhoe offers high flotation

The Hydraulic Machinery Co. announces the Hy-Hoe Model 480 crawler backhoe. This ½-yard-struck-capacity unit is said to offer exceptionally high flotation; it reportedly can work on any ground on which a man can walk.

Powered by a 70-hp 6-cylinder gasoline engine, the machine has a 360-degree swing, digging depth of 15 feet, reach of 23 feet, and a dump height (closed) of 12 feet 6 inches. It can climb grades of 30 per cent, and its top speed is 1.5 mph.

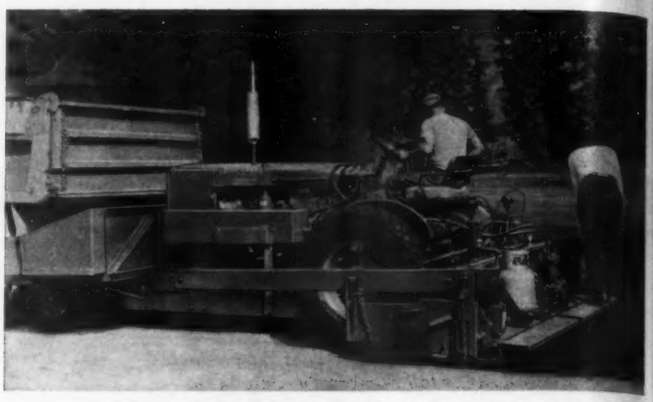
Over-all width of the crawler is 8 feet, which enables it to be transported without special permit.

A 3-pump hydraulic system permits the operator to work both boom and bucket while swinging.

For further information write to the Hydraulic Machinery Co., Dept. C&E, 1400 National Ave., Waukesha, Wis., or use the Request Card at page 18. Circle No. 91.

For more facts on insert, use Request Card at page 18 and circle No. 311

The Trac-Paver Model 75 can pave any thickness from 0 to 5 inches and crowns up to 1½ inches, convex or concave.



Medium-duty paver for asphalt work

The Trac-Machinery Corp. announces the Trac-Paver Model 75.

The Model 75 is said to incorporate, on a smaller scale, many features of the Trac-Paver Model 200. It offers rubber-tire mounting; 18-mph over-the-road speed; full floating screed; hydraulic drive while paving; hydraulic-driven oscillating screed bar; propane-heated screed plates; full operator visibility of all operations; power steering; and 4,000-pound-capacity hopper.

This paver reportedly will lay all types of bituminous mixes without extra attachments. The basic Model 75 will pave 8 feet wide; optional snap-on extensions are available to increase paving width up to 10 feet.

For further information write to the Trac-Machinery Corp., Dept. C&E, Nunda, N. Y., or use the Request Card that is bound in at page 18 of this issue. Circle No. 17.

Gorman-Rupp's new Submersible

5 hp motor: single-phase 230 volt, 3-phase 220 volt, or 3-phase 440 volt. Capacity range from 300 gpm at 10′ tdh to 10 gpm at 120′ tdh.

Model 3VSI is the *first* All-American-designed-and-produced submersible dewatering pump. There's no mystery about it in techniques or tools. Like all Gorman-Rupp pumps, it's simple in design and rugged on the job. Has only one moving part and three wearing surfaces, made of special materials to stand up against sand-and-water mixtures. Can stay under water or pump itself dry and run that way for long periods without damage. Easily serviced by regular personnel with common tools.

And—it's an All-American in performance. On the job above, the 3VSI was in continuous service pumping water out of an excavation for a sewerage treatment plant at North Madison, Ohio (Wm. Passalacqua Bldrs. Inc.). Working against a static head of 40′, and with 150′ of 3″ discharge hose, the pump kept the excavation dry and the work on schedule.

Here's the pump you've needed—the one that meets modern construction requirements. *See your Gorman-Rupp distributor, or write us direct.*

THE GORMAN-RUPP COMPANY
305 Bowman Street Mansfield, Ohio
Gorman-Rupp of Canada Limited, St. Thomas, Ontario

2900

For more facts, use Request Card at page 18 and circle No. 310

Portable scaffold is all-purpose unit

An all-purpose aluminum scaffold unit, which may be rolled through doorways and adjusted to work on stairways, is announced by Bil-Jax, Inc.

The complete rolling scaffold

weighs 77 pounds, including casters. The single unit is 6 feet 6 inches high, 28 inches wide, and 7 feet long.

The expanded aluminum work platform may be placed on any rung, and extra ladder sections in 3, 4, 5, and 6-foot lengths may be added.

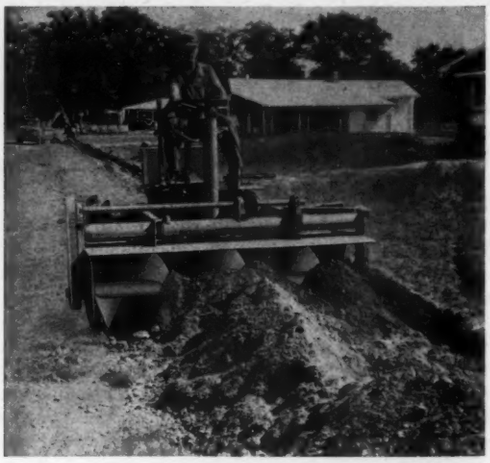
For further information write to Bil-Jax, Inc., Dept. C&E, Box 38, Archbold, Ohio, or use the Request Card at page 18. Circle No. 31.

Hand cleaner helps prevent cement poisoning

Pointing out that winter cold, combined with the drying effects of cement, can cause serious hand chapping and infections, Edick Laboratories offers a new preparation said to dissolve cement without irritating the skin and at the same time to replenish the skin oils.

In addition to washing off cement, Edick hand cleaner reportedly removes oil, dirt, and grease that is imbedded in the pores. It also contains lanolin oil to protect against chapping, and a medicant to help prevent dermatitis or cement poisoning, as well as secondary infections.

For further information write to Edick Laboratories, Inc., Dept. C&E, 2358 S. Burrell St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 42.



A highly maneuverable 4-wheel-drive unit, the Pow-R-Ditch Filler is jointed in the center for easy steering, better control, and greater ground grip from all four wheels.

New backfiller designed to fill ditch faster

A new machine designed specifically for fast backfilling has been introduced by the Vermeer Mfg. Co.

Called the Pow-R-Ditch Filler, it deposits dirt back in the ditch in one pass. A Wisconsin rear-mounted 36-hp engine powers the unit. Hydraulic power provides forward travel speed during backfilling. When in transport the unit uses mechanical drive. Power steering is a standard feature.

The front-mounted 24-inch power-driven auger, 7½ feet long, is said to deposit dirt back into the ditch in a fraction of the time usually required for the job, and to leave the adjacent area clear of debris and dirt.

The operator's platform is located above the auger, allowing unobstructed visibility both ahead and behind the unit.

For further information write to the Vermeer Mfg. Co., Dept. C&E, 1437 W. Washington, Pella, Iowa, or use the Request Card at page 18. Circle No. 20.

Seeded blankets offered for hard-to-seed areas

Seeded blankets that can be easily rolled out and tamped down to provide a grass covering in areas where other planting methods would not work are offered by Troy Blanket Mills.

Known as Troyturf, the blanket consists of a 16-ounce mat of jute; a bottom layer of special paper, seed, fertilizer, Ph control, vermiculite; and organic mulch that provides a uniform distribution of 3½ tons per acre.

Adaptable for difficult spots such as highway embankments, gullies, and bridge abutments, the blankets reportedly will grow grass without special soil preparation and are particularly suitable for areas where soil erosion or gullying is a problem.

According to the company, any combination of seed, fertilizer, or moisture-control agents can be used for a specific location, with special formulas and ingredients incorporated right in the blanket.

No regular seeding of the ground or overseeding of the mat is necessary. The needled body of the blanket is said to hold the seeds firmly in place until they germinate, despite flowing water, high winds, shifting sand, or other conditions.

For further information write to the Horticultural Division, Troy Blanket Mills, Dept. C&E, 200 Madison Ave., New York, N. Y., or use the Request Card at page 18. Circle No. 6.

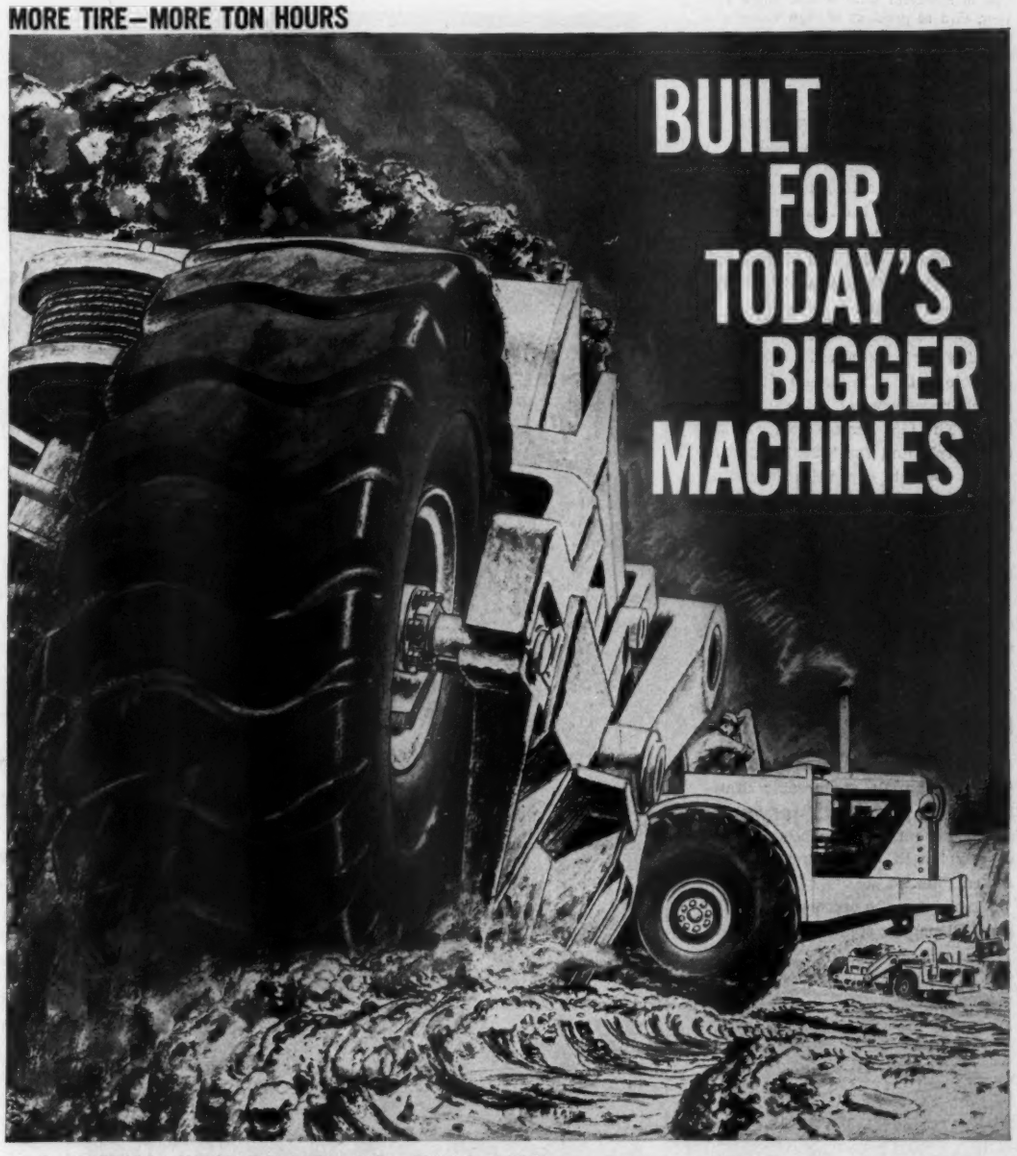
Fume-free heater for use in closed-area work

The Champion Heater Co. offers a vented heater designed to supply fume-free, odor-free heat to men working in closed areas.

Called Model 120-Vented, the heater can be used with a stack extension said to carry all traces of fumes or odors outdoors. According to the manufacturer, it is capable of comfortably heating an area equivalent to that of a 6-room house.

For further information write to the Champion Heater Co., Dept. C&E, 3700 Forest Park Ave., St. Louis 8, Mo., or use the Request Card at page 18. Circle No. 11.

MORE TIRE—MORE TON HOURS



U. S. ROYAL CON-TRAK-TOR FULL LUG Built burlier to take it under the roughest conditions • Increased resistance to impact and rock penetration • Wide, full-lug tread gives more ground-gripping contact and flotation—resists side slippage and assures more ton hours of service • More durable carcass—more tires retreadable • Prove-test them on your present equipment, specify them for your new machines • Call your U.S. ROYAL DEALER or TIRE CENTER.

U.S. ROYAL SAFETY 1st **TRUCK TIRES** US RUBBER UNITED STATES RUBBER Rockefeller Center, New York

For more facts, use Request Card at page 18 and circle No. 312

The breakers on the new Cedarapids units are said to be ideally suited for use in material with a low silica content, and to produce a high volume of cubical aggregate with a low percentage of fines and a minimum of slabs, slivers, and soft stone.

Portable crushing plants with vibrating feeders

Two new portable primary crushing plants have been announced by the Iowa Mfg. Co.

They are the 4336 and 3026 single-impeller impact breakers with vibrating grizzly feeders.

Featuring simple design and fewer working parts, these units are highly portable with a minimum of disassembly necessary to meet road weight limits. The 4336 has a capacity of 200 to 400 tph, and the 3026 is rated at 150 to 250 tph, capacities depending on material characteristics and size of product.

For further information write to the Iowa Mfg. Co., Dept. C&E, 916 16th St. N.E., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 5.

Unit copies blueprints in single operation

A new 27-inch processing unit designed to handle engineering drawings, maps, and other large records and documents to 27 inches wide and of any length is announced by the Anken Film Co.

When using the processor with Anken's Plenacopy solution (a developing-stabilizing monobath) and Plenacopy paper, copies of blueprints can be made in one operation. By shooting directly through the blueprint onto the Plenacopy paper, a black-on-white working print may be obtained.

The unit is of metal construction with a plastic developer tray.

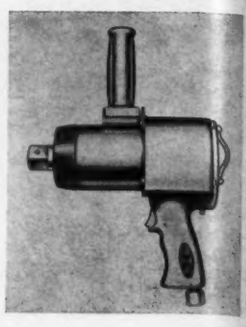
For further information write to the Anken Film Co., Dept. C&E, Newton, N. J., or use the Request Card at page 18. Circle No. 32.

Air impact wrench is heavy-duty unit

Albertson & Co., Inc., has announced a new Sioux heavy-duty 1-inch-square-drive No. 482 air impact wrench.

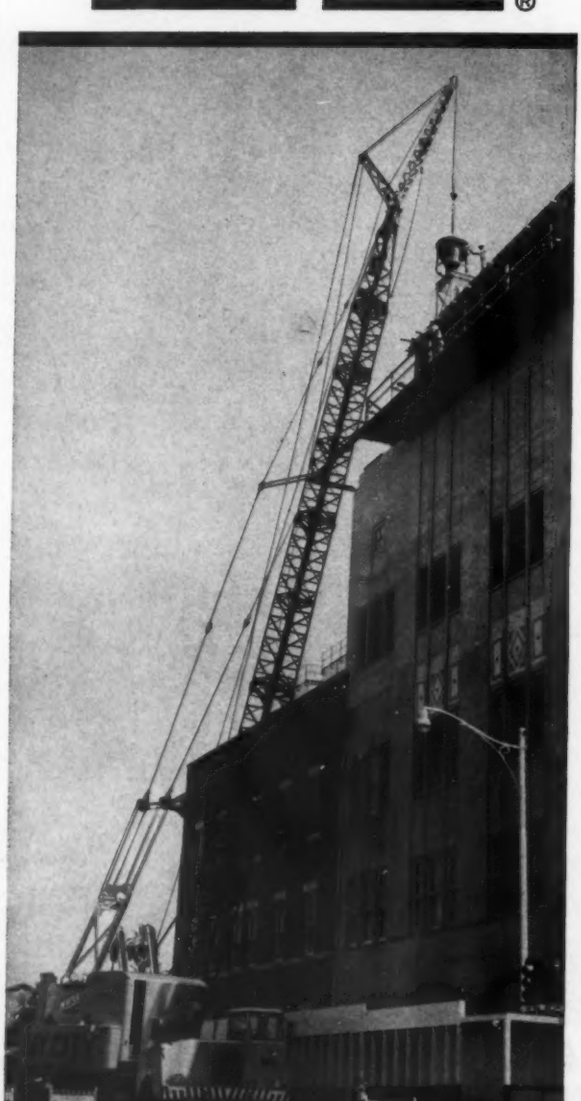
Air entry is through a ½-inch inlet. The streamlined housing provides free air flow with minimum restriction. With more air moving at higher speeds, the wrench is said to accelerate rapidly for faster rundown.

The reversing valve with related volume control for right-hand operation is well protected and leakproof, according to the manufacturer. Bails provide for horizontal or vertical suspension. An auxiliary, adjustable handle can be moved to four positions.



For further information write to Albertson & Co., Inc., Dept. C&E, 3100 Lowell Ave., Sioux City 2, Iowa, or use card at page 18. Circle No. 34.

CRANEMOBILE®



"...so swift, so sure, so safe in operation that many of our customers demand it's use."

MARCO EQUIPMENT CO.,
CONTRACTOR'S EQUIPMENT RENTAL,
PHOENIX, ARIZONA

You'll hear this sort of thing from many more **CRANEMOBILE** owners who are in the crane rental business, and here's why . . .

Control-of-the-load operation with special **CRANEMOBILE** load lowering device. Provides accurate POSITIVE control in the lowering of heavy loads. When engaged, this device **automatically** lowers the load, without using brake, at varying speeds.

Pin-point load maneuvering with **CRANEMOBILE** power-controlled independent boom hoist. Here's a **true** erector's boom hoist—the operator has precise control of boom alone, or boom and load, at all times.

Big brakes, sturdy clutches, and large cable drums. **CRANEMOBILE** brake and clutch flanges have large contact areas for superior control, superior operation. **BAY CITY** tandem drum arrangement assures ample cable capacity for long boom jobs.

CRANEMOBILES are available in 25-, 30-, 35-, and 40-ton sizes . . . are mounted on specially designed **BAY CITY**-built 6x4 or 8x4 carriers. For detailed information and the name of your nearest dealer, write today.

BAY CITY SHOVELS, INC.
2611-A Center Ave.
BAY CITY, MICHIGAN

a subsidiary of Unit Crane & Shovel Corp.

For more facts, use Request Card at page 18 and circle No. 350

Concrete gunning machine is self-propelled unit

Pneumatcrete, a new self-contained and self-propelled concrete gunning machine, is offered by the Zimmerman Mfg. Co.

This unit consists of a large steel pressurized tank inside of which are separate compartments for the storage and transportation of sand, cement, aggregate, and water. The steel shell also houses conveyor systems that feed the various ingredients to the mixing chamber at the rear of the tank. A drive-shaft PTO provides the power to operate the internal conveyor systems and mixing chamber, and also to drive the heavy-duty 500-cfm rotary air compressor that is an integral part of the Pneumatcrete. The machine is completely controlled and operated by one man.

Upon arrival at the job site, desired quantities of sand, aggregate, and cement are automatically fed from the individual storage compartments into the mixing chamber of the machine. Ingredients are mixed in the chamber under pressure.

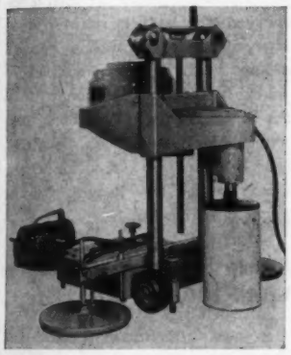
A complete line of optional accessories is available.

For further information write to the Zimmerman Mfg. Co., Dept. C&E, Ephrata, Pa., or use the Request Card at page 18. Circle No. 40.

One man controls the entire operation of the Zimmerman concrete gunning machine from his position at the nozzle, which may be as far as 250 feet from the machine.

Concrete-core drill rig is heavy-duty, portable

Clean holes from 1 to 10 inches in diameter reportedly can be drilled vertically or horizontally in reinforced concrete with the newly announced Kor-It Versadrill Model K-500. This heavy-duty portable drilling machine features four readily changed spindle speeds (500, 1,000,



1,500 and 2,500 rpm) to produce the fastest penetration rate for the diameter bit being used.

Heavy pressure may be maintained on the bit with minimum operator effort by means of a ball-bearing feed screw. This sturdy machine can be moved easily by means of its large swivel wheels and can be quickly stabilized with the built-in leveling screws.

The machine is easily positioned on its side for drilling through walls by using four pipe legs that attach to clamps provided on the frame.

A vacuum hold-down unit is available to hold the drilling machine in position with 3,000 pounds pressure.

The Versadrill is powered by a 5-hp electric motor, 3-phase 220/240-volt. The complete machine, of cast aluminum and steel construction, is compact and weighs just 275 pounds.

For further information write to The Kor-It Co., Inc., Dept. C&E, 991 Richard Ave., Santa Clara, Calif., or use the Request Card at page 18. Circle No. 37.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

WHY THE RUGGED STERLING EARTH BORING MACHINE IS POWERED BY A FORD INDUSTRIAL ENGINE . . .

Sterling Engineering & Manufacturing Company uses the dependable Ford 223 6-cylinder Industrial Engine in its earth boring machines, because at low rpm's, this engine easily delivers the high torque needed for tough digging operations. The rugged, yet precision-engineered features of Sterling Diggers have won for them world-wide acceptance by telephone and power companies, electric and pole line contractors, and road and guard rail contractors. According to Sterling . . . "Where digging is the hardest, Ford Industrial Engines pay off as power performers where performance really counts!

"Ford engines' low maintenance, economical operation, and ready availability of parts are a major factor in Sterling Diggers' universal glowing performance reports." And no wonder, for Ford Parts availability means a minimum of downtime for Sterling's customers.

More OEM's than ever before are swinging to Ford, because *only* Ford offers a full line of modern, overhead-valve-design engines to meet every power requirement. And they're *compact* . . . delivering more horsepower per pound of engine weight than ever before possible. Ruggedly built, too . . . for longer engine life and more reliable operation.

Low-priced, quality-controlled Ford Parts are as near as your Ford Dealer. You get red-carpet service *when* it's needed! Most engines are available as foot- or skid-mounted power units . . . open or closed models. Call or see us today!

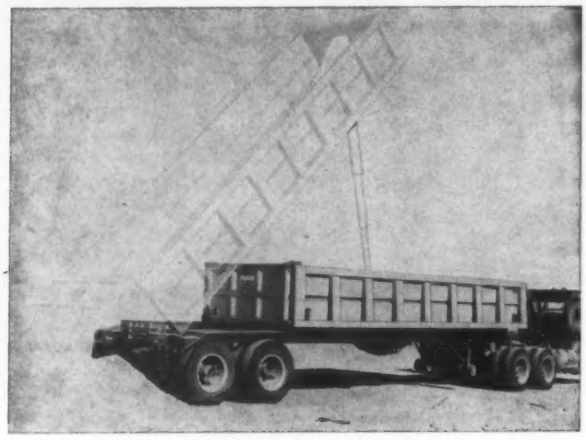
Ford
INDUSTRIAL ENGINES AND POWER UNITS

FORD POWER IS RIGHT FOR YOUR EQUIPMENT, TOO!

INDUSTRIAL ENGINE DEPARTMENT, FORD DIVISION, FORD MOTOR CO., P.O. BOX 598, DEARBORN, MICH.

West of Rockies write to: FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF. / FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

For more facts, use Request Card at page 18 and circle No. 351



The body of the new Pay-Pac dump trailer can be hydraulically moved to the rear where it automatically locks for dumping.

New dump trailer gains maximum load allowances

A dump trailer that hydraulically positions the payload on an extra-length trailer chassis is jointly announced by Spencer-Safford Loadcraft, Inc., and the Daybrook Hydraulic Division of the Young Spring & Wire Corp.

Known as the Loadcraft-Daybrook Pay-Pac Hydra-Shift dump trailer, the new unit reportedly offers the following advantages: attains maximum legal payloads in every state; enables operators to gain maximum load allowances authorized by various state weight laws; allows interstate operation without changing equipment or splitting loads; eliminates equipment obsolescence when weight laws change; permits ready interchangeability of tractors and single or tandem-drive axle units; has ground-hugging stability throughout the dumping cycle.

The Pay-Pac Hydra-Shift uses a 4-section, telescopic double-acting hydraulic hoist to both position the 24-foot body on the extra-length chassis and to dump the payload. A single cylinder moves the Pay-Pac through its entire dumping cycle.

From its predetermined transport position, governed by local gross weight restrictions and number of axles carrying the payload, the body is hydraulically moved to the rear where it automatically locks for dumping. Smooth, continuous power on the hoist raises the body to its dump position. After the load is discharged, the body is returned to its forward transport station where it automatically locks into position.

For further information write to the Young Spring & Wire Corp., Daybrook Hydraulic Division, Dept. C&E, 500 Lehman Ave., Bowling Green, Ohio, or use the Request Card at page 18. Circle No. 19.

Space heater produces up to 200,000 Btu

A new directional space heater called Solar-Jet is available from the Dahl-Son Equipment & Mfg. Co.

The unit produces up to 200,000 Btu with LP or natural gas. It is equipped with pressure gage, regulator, and adjustable heat control.

The body is made of heavy-gage galvanized steel. The internal-combustion chamber is a separate unit, providing most efficient heat distribution and keeping the outer jacket of the heater cool.

For further information write to the Dahl-Son Equipment & Mfg. Co., Dept. C&E, 5109 Stonewood, Riverside, Calif., or use the Request Card at page 18. Circle No. 2.

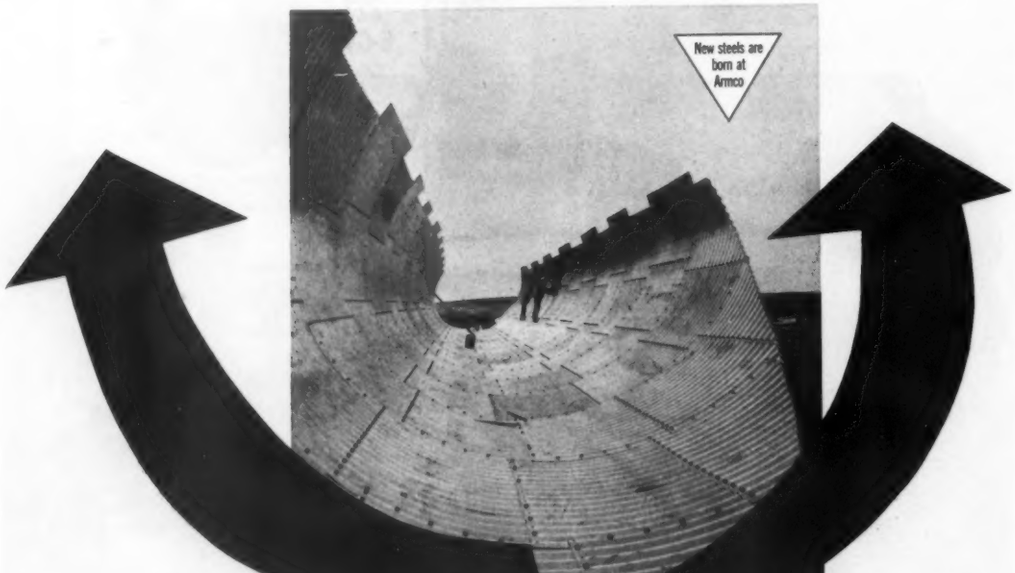
New backhoe attachment digs to depth of 12½ feet

International Harvester Co. has available a new backhoe, for its No. 340 and 460 industrial tractors, that digs to a 12½-foot depth within a 180-degree arc.

The International Wagner No. 12[illegible] backhoe is capable of digging forward under sidewalks or obstacles or beneath the tractor with its improved bucket mounting.

New bucket suspension allows the unit to dig square holes or other special-sized or shaped encasements. To provide long lasting service with a minimum of maintenance, [illegible]

Construction workers bolt side plates on the large MULTI-PLATE Pipe while rolled to the right. Plates on left are to be added.



Large MULTI-PLATE Pipe Assembled at Ice Harbor Dam

...without hoisting equipment!

One of the many unusual construction projects at Ice Harbor Dam, Washington, was the installation of an 18-foot diameter Armco MULTI-PLATE® Pipe. The contractor, Peter Kiewit Sons Co. of Walla Walla, assembled this large-diameter pipe without hoisting equipment!

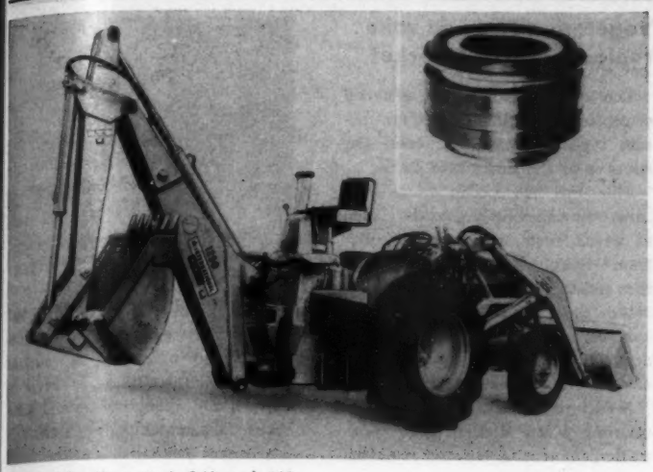
Construction men devised a unique "rolling" method of assembly. After plates in the lower part of the pipe were bolted together, the structure was rolled to the right to permit easy addition of side plates from ground level. Then it was rolled to the left and the process was repeated.

Armco MULTI-PLATE Pipe, Arch and Pipe-Arch have served as dependable drainage structures for more than 30 years. For catalog, showing dimensions and helpful contractor data, write us. Armco Drainage & Metal Products, Inc., 5301 Curtis St., Middletown, Ohio.

Steel
For strength, economy, durability

ARMCO Drainage & Metal Products

For more facts, use Request Card at page 18 and circle No. 314



Designed for Harvester's 340 and 460 industrial tractors, the International Wagner No. 1250 backhoe has improved bucket mounting that enables it to dig forward beneath sidewalks or obstacles or beneath the tractor.

aligning trunnion bearings are used at all important pivot points. A double trunnion bearing is used within the swing frame itself.

The heavy-duty box-beam design of the backhoe is given additional support by a full-length heavy-duty subframe, which dissipates shocks of heavy digging. Hydraulic power, furnished by the tractor's internal hydraulic pump, speeds the operation of the backhoe, which is close-coupled to the tractor.

For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 92.

Hydraulic gear pumps offered in two models

Two new hydraulic gear pumps have been announced by the Be-Ge Mfg. Co. They are designated Models PM-106 and PM-110.

At 2,000 rpm and 1,500 psi, the PM-106 pump is rated at 13 gpm, and the PM-110 at 20 gpm. All ratings on Be-Ge pumps are based on actual continuous operation.

These units are said to be completely pressure-balanced with automatic adjustment of wear plates, providing better than 90 per cent efficiency throughout an unusually long service life. They may be driven clockwise or counterclockwise without any change or adjustment.

For further information write to the Be-Ge Mfg. Co., Dept. C&E, P. O. Box 67, Gilroy, Calif., or use the Request Card at page 18. Circle No. 30.

Motorized pretensioner for prestressing

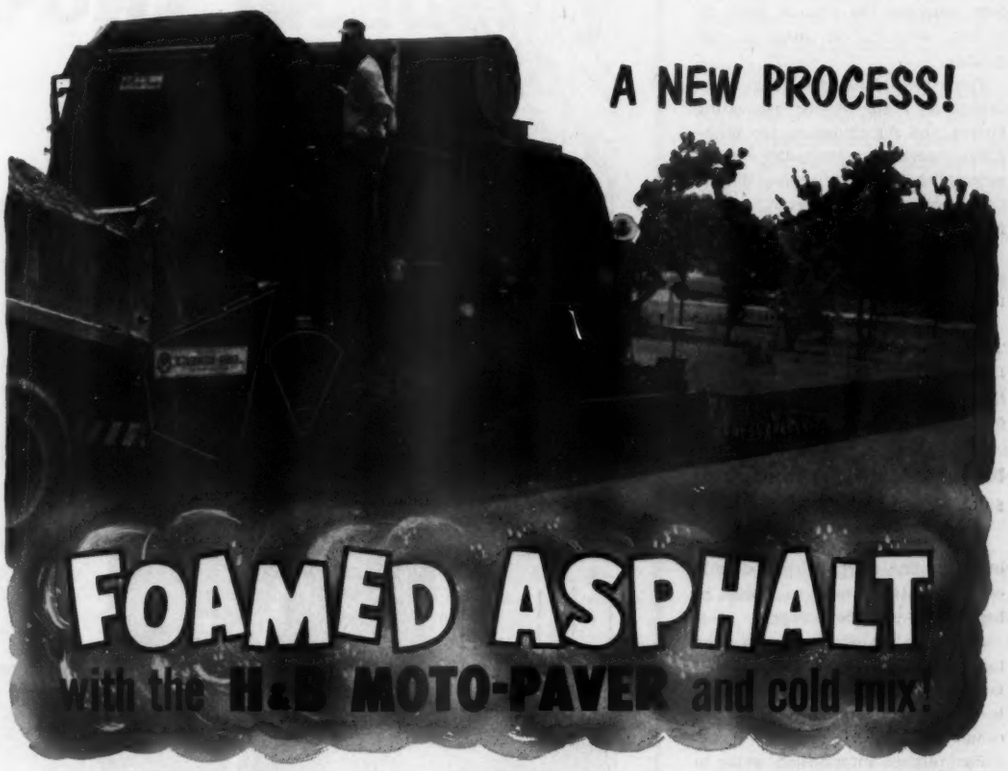
A 15-ton-capacity pretensioner for single-strand prestressing is available from the Simms Engineering Co.

The unit is positioned only once. Vertical adjustment is accomplished by a motor, reducer, and bevel-gear drive. A reversing drum switch is furnished for raising or lowering the ram roller frame, and limit switches are mounted at the top and bottom.

Horizontal positioning is accomplished by a pushing ram, which is mounted on a special roller frame.

Hydraulic controls consist of a 4-way open center valve, adjustable relief valve for quick setting of hydraulic pressure for different sizes of strand, and a hydraulic master gage (accuracy, ½ of 1 per cent) that also has a recalibration screw for resetting of the gage.

For further information write to the Simms Engineering Co., Dept. C&E, 5301 W. Patterson Ave., Chicago 41, Ill., or use the Request Card at page 18. Circle No. 85.



HERE'S HOW!

Asphalt, prior to being combined with aggregate, is reduced to a *foam* through the action of steam via a special jet-type nozzle. The foamed asphalt evenly distributes throughout the mix. As it is rolled, the foam dissipates and the asphalt reverts to its natural state. Benefits and advantages are many. For example . . .

NO WAITING FOR CURING

Compaction by rolling *immediately* after spreading.

ASK FOR DETAILS about this NEW OPTIONAL FEATURE ON MOTO-PAVER, H&B's combination *Traveling* Mixer and Paver.

TOWER TYPE BATCH PLANTS in 8 sizes
MOBILE TYPE BATCH PLANTS in 6 sizes
BASE STABILIZER PLANTS in 2 sizes
MOTO-PAVER, the travelling combination Mixer and Paver (cold mix)

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Engineers
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Export Dept. 205 W. Wacker Drive, Chicago, Illinois

For more facts, use Request Card at page 18 and circle No. 315

The new backfill blades, which fasten onto the Hopto bucket, range in size from 4 to 8 feet and in weight from 130 to 490 pounds.

New backfill blades offered for excavator

Three new backfill blades for the Hopto hydraulic excavator Series 500, 200, and 110 snap-mount are announced by Warner & Swasey Co.

The blades range in size from 8 feet, weighing 490 pounds, down to 4 feet, weighing as little as 130 pounds.

These new blades are designed to fasten onto the Hopto excavating bucket, and the change to the backfilling operation reportedly can be accomplished in a fraction of the time required to completely change from one attachment to another.

The company also points out that the blade can be carried piggy-back from job to job.

For further information write to The Warner & Swasey Co., Badger Division, Dept. C&E, 1124 W. Fifth St., Winona, Minn., or use the Request Card at page 18. Circle No. 12.

New ballasting material said to add tire life

"Led" Ballast, Inc., announces an improved dry, inert, pulverized mineral blend to be used as ballast in heavy road-equipment tires.

According to the company, the material provides the operator with a cushioned ride, and increases tire traction and life, while reducing soil compaction.

For further information write to "Led" Ballast, Inc., Dept. C&E, P. O. Box 265, Boulder, Colo., or use the Request Card that is bound in at page 18. Circle No. 23.

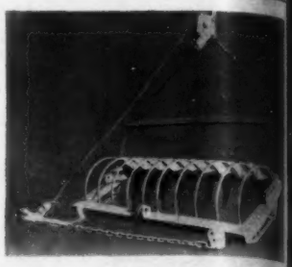
Lightweight tamper for one-man operation

A new, lightweight, ram-type model has been added to the Jay line of one-man tampers.

This Jay-Ram is said to offer excellent compaction of all types of soil, especially clay, and is designed for easy maintenance. Simple to operate, the new model is reported to give maximum compaction efficiency.

For further information write to the Jay Co., Division of J. Leukart Machine Co., Inc., Dept. C&E, 2222 S. Third St., Columbus 7, Ohio, or use the Request Card at page 18. Circle No. 25.

Vegetation-removal rake replaces dragline bucket



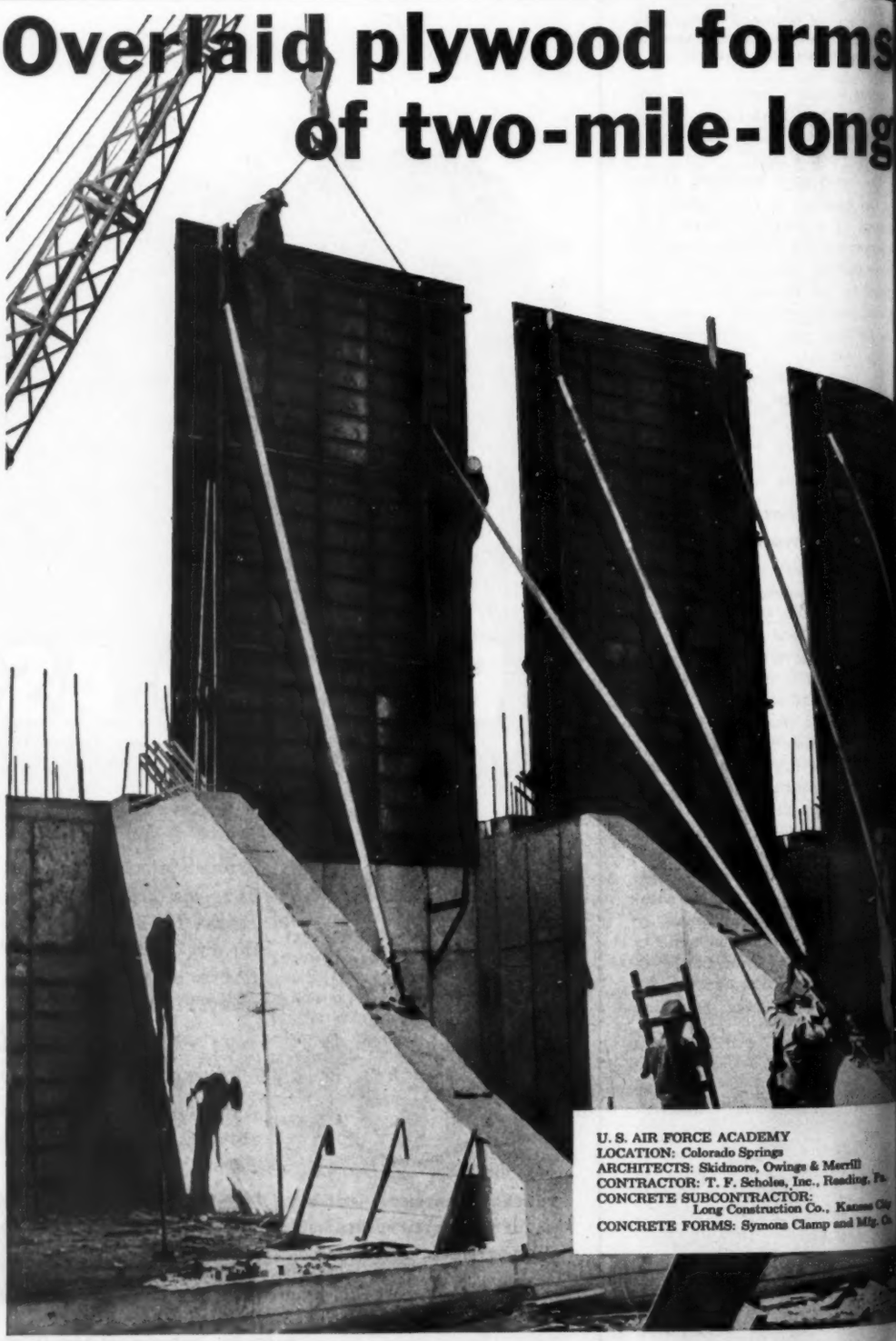
The Basket Rake, a unit designed to replace a dragline bucket for certain types of work, has been announced by the Insley Mfg. Corp.

This unit has special design features for removing vegetation (such as weeds, roots, vines, and shrubs) from irrigation and drainage ditches, lake fronts, ponds, canals, rivers, and creeks. Since the Basket Rake can be cast beyond the boom point like a dragline bucket, many ditches can be cleaned from just one side.

A feature in addition to the 9-foot cleaning width is deep tooth penetration for tearing out and removing roots, and roll-feed loading. The design of the rake makes it easy for the operator to maintain the original grade level. Installation is similar to that for a dragline bucket and takes about the same amount of time.

A Basket Rake with a 9-foot clean-

Overlaid plywood forms ma of two-mile-long ra



U. S. AIR FORCE ACADEMY
LOCATION: Colorado Springs
ARCHITECTS: Skidmore, Owings & Merrill
CONTRACTOR: T. F. Scholes, Inc., Reading, Pa.
CONCRETE SUBCONTRACTOR: Long Construction Co., Kansas City
CONCRETE FORMS: Symons Clamp and Mfg. Co.

ing width weighs 1,500 pounds and is said to be easily handled by a ½-cubic-yard machine.

For further information write to the Insley Mfg. Corp., Dept. C&E, P. O. Box 167, Indianapolis 6, Ind., or use the Request Card at page 18. Circle No. 82.

Offer new, submersible dewatering pump

A new submersible dewatering pump is offered by the Gorman-Rupp Co.

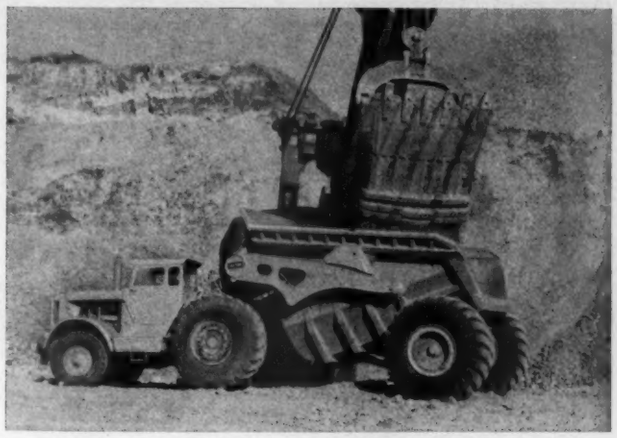
Designated Model 3VS1, it is a 3-inch centrifugal powered by a 5-hp 3,450-rpm 60-cycle electric motor, and is available in three voltage selections: single-phase, 230-volt; 3-phase, 220-volt; or 3-phase, 440-volt.

A remote-control box with overload protection and 75 feet of heavy-duty electrical cable are standard equipment with each pump.

The complete unit weighs 128 pounds. Capacity ranges from 10 gpm at 120 feet of head to 300 gpm at 10 feet of head.

According to the manufacturer, this pump may run in complete safety, unattended, even if the hole runs dry.

For further information write to The Gorman-Rupp Co., Dept. C&E, 305 Bowman St., Mansfield, Ohio, or use the Request Card at page 18. Circle No. 80.



Special high-strength alloy steels are used in the body and frame of Easton's TS-3755 rear-dump for durability when working under large-capacity shovels.

New 55-ton rear-dump has variable wheelbase

A new 37-cubic-yard 55-ton variable-wheelbase rear-dump trailer is announced by the Easton Car & Construction Co.

Known as the TS-3755, the unit is adaptable for use with any suitable 2-axle tractor. Dumping, to an angle of 55 degrees, is accomplished by means of two double-acting hydraulic cylinders supplemented by Easton integral auxiliary control devices. The hoists are fully shielded when the body is in the loading and carrying positions.

As the body is raised to dump position, the wheelbase shortens automatically, permitting greatly increased maneuverability in tight working areas. In fully dumped position, the lip of the body extends well out beyond the tires, with ground clearance for free discharge of the load.

The TS-3755 is available with either large single tires or with dual tires.

For further information write to the Easton Car & Construction Co., Dept. C&E, Easton, Pa., or use the Request Card at page 18. Circle No. 41.

Tough new truck tire designed for longer life

A truck tire that features a 3-rib bladed tread design has been announced by The Firestone Tire & Rubber Co. The tire is designated Transport-100.

This new tread design will give the tire 50 per cent more mileage than previous 100 level Firestone original equipment truck tires, according to the manufacturer.

Besides increased traction, the tire also features a flatter crown for equal pressure throughout the tread print and extra load-hauling efficiency; stone guards in the tread to keep it free of gravel and pebbles; and a tread design especially engineered with varying-size tread elements to eliminate tire whine.

For further information write to The Firestone Tire & Rubber Co., Dept. C&E, 1200 Firestone Parkway, Akron 17, Ohio, or use the Request Card at page 18. Circle No. 79.

make fast work rampart at Air Academy

OVERLAID PLYWOOD CONCRETE FORMS did a big job in a hurry at the Air Force Academy in Colorado Springs. The 10,000 ft. retaining wall that bounds two sides of the raised campus was formed at the rate of 70 lin. ft. daily. Large plywood panel assemblies cut time and cost because of their high rate of re-use. And the overlaid plywood formed such smooth concrete that it was possible to install granite surfacing over it with a minimum clearance and maximum simplicity of anchorage.

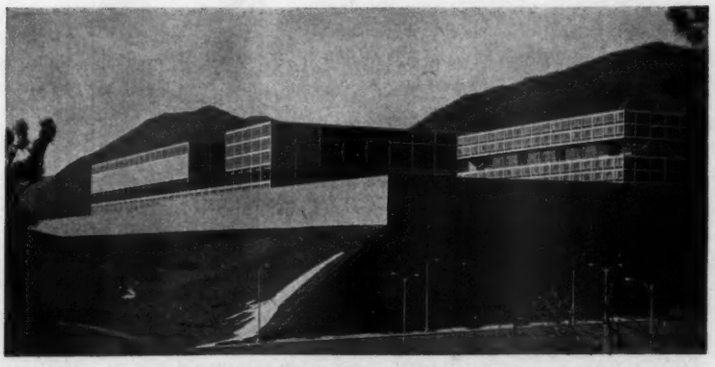
Wall height varies from 15½ to 33 ft. Along most of its length, counterforts on 14-ft. centers connect it with an anchor wall 18 ft. to the rear. Each 70-ft.-long section was concreted in three pours: first, footings; second, anchor wall and the lower 13 ft. of both counterforts and main wall; third, upper portions.

Form components were Symons Steel-Ply forms—2x8-ft. panels of high density overlaid fir plywood, encased in steel frames 2½ in. thick. They were pre-assembled into large units, two panels high and six wide, and placed by crane or from traveling scaffolds. Overlaid plywood was specified to produce ultra-smooth concrete and for its high re-usability. The contractor formed 600,000 sq. ft. of wall with 37,000 sq. ft. of plywood and has used the same forms many times since.

ALWAYS SPECIFY DFPA-QUALITY TRADEMARKED PLYWOOD. Concrete form grades include: INTERIOR PLYFORM®—standard concrete form grade, made with moisture-resistant glue, gives multiple (up to 12) re-uses; EXTERIOR PLYFORM®—standard concrete form grade, made with waterproof glue, gives up to 25 or more re-uses; OVERLAID EXTERIOR PLYWOOD—special panel with hard, glossy resin-fiber surfaces—forms smoothest concrete, gives up to 200 re-uses.

DOUGLAS FIR PLYWOOD ASSOCIATION
TACOMA 2, WASHINGTON
—a non-profit industry organization devoted to research, promotion and quality control

DFPA TESTED QUALITY



In design and material, the granite-surfaced concrete wall is architecturally harmonious with the raised geometric campus it encompasses. Overlaid plywood forms insured smooth concrete and reduced costs.

For more facts, use Request Card at page 18 and circle No. 316

The Model 250 Bantam crane-excavator, a 5-ton rig, has digging and lifting operations cable-operated; a hydraulic system controls the swing. Available for mounting is a Model 54 carrier with 4 × 4 drive and a gasoline engine developing 135 horsepower at 4,000 rpm.

New crane-excavator is compact 5-ton rig

The Schield Bantam Co. has announced its Model 250 Bantam crane-excavator, a 5-ton rig that features both cable and hydraulic operation.

All digging and lifting operations are cable-operated, while an efficient hydraulic system controls the swing.

The swing is obtained through a 12-gpm 1,900-psi pump, two single-acting 6 × 34-inch rams, and a single-row 3-inch chain. Arc of swing is 370 degrees, either right or left. Swing speed is 5.5 rpm.

A Continental F-162 gas engine, developing 37 horsepower at 1,800 rpm, powers the machine's upper unit. A single shaft, mounting both hoist and drag drums as well as the boom hoist, controls all cable operations.

The standard Model 250 is designed to operate with five interchangeable front-end attachments: backhoe, crane, dragline, clamshell, and shovel. As a backhoe, the Bantam will dig to a maximum depth of 12 feet 11 inches, and reportedly will produce an average of 100 feet of 5-foot trench per hour.

With a crane attachment, the Model 250 will handle loads up to 5 tons and boom lengths to 45 feet.

As a dragline, the unit reportedly will produce up to 85 yards per hour in average material, and will handle from 50 to 60 yards per hour when equipped with the clamshell attachment. As a shovel, the Bantam can load up to 90 yards per hour out of stockpile, according to the manufacturer.

For further information write to the Schield Bantam Co., Dept. C&E, 219 Park St., Waverly, Iowa, or use the Request Card at page 18. Circle No. 84.

Versatile pump available for soil stabilization

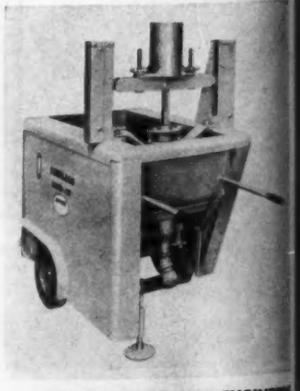
The Air Placement Equipment Co. announces a new combination pump known as the Hydra-Jak.

Designed for soil-stabilization applications, the unit may also be used as a sand-cement grouter in backfilling sewers, tunnels, and forms.

Weighing 600 pounds, the Hydra-Jak Model HJ-11 is powered with a Wisconsin 6-hp air-cooled engine. It reportedly has a capacity of 85 cubic feet per hour, and will pump at pressures up to 150 psi.

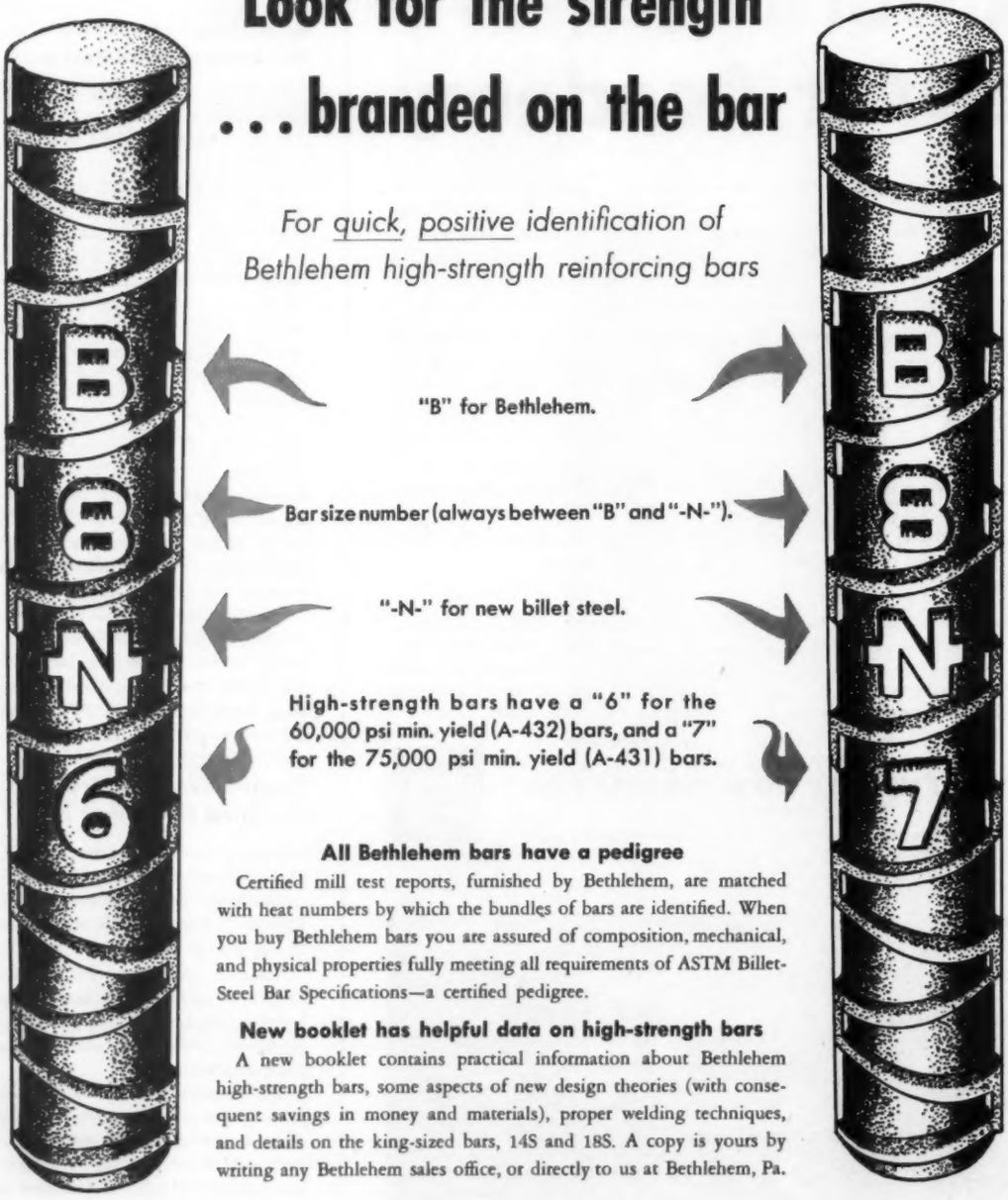
The Hydra-Jak is equipped with wheelbarrow-type handles and two 12 × 300 semipneumatic tires and ball-bearing wheels for portability.

For further information write to the Air Placement Equipment Co., Dept. C&E, 1000 W. 25th St., Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 76.



Look for the strength ... branded on the bar

For quick, positive identification of Bethlehem high-strength reinforcing bars



"B" for Bethlehem.

Bar size number (always between "B" and "-N-").

"-N-" for new billet steel.

High-strength bars have a "6" for the 60,000 psi min. yield (A-432) bars, and a "7" for the 75,000 psi min. yield (A-431) bars.

All Bethlehem bars have a pedigree

Certified mill test reports, furnished by Bethlehem, are matched with heat numbers by which the bundles of bars are identified. When you buy Bethlehem bars you are assured of composition, mechanical, and physical properties fully meeting all requirements of ASTM Billet-Steel Bar Specifications—a certified pedigree.

New booklet has helpful data on high-strength bars

A new booklet contains practical information about Bethlehem high-strength bars, some aspects of new design theories (with consequent savings in money and materials), proper welding techniques, and details on the king-sized bars, 14S and 18S. A copy is yours by writing any Bethlehem sales office, or directly to us at Bethlehem, Pa.

Steel For strength ... economy ... versatility

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

For more facts, use Request Card at page 18 and circle No. 317

A low-loading dump body is a factory-mounted option available for the new International Model C-130 truck. Rated up to 8,800 pounds gvw, the Model C-130 features low-profile styling and is equipped with I-beam front-end suspension and channel steel frame. Wheelbases range from 122 to 140 inches. Standard power plant is the International V-226 V-8 engine rated at 155 horsepower. For further information write to the **International Harvester Co.**, Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 65.

New lightweight boots ease supply headaches

A new line of lightweight, stretchable boots is announced by the So-Lo Marx Rubber Co.

Made entirely of pure gum rubber, these boots are offered in only two sizes, yet are said to fit all men's shoes in sizes 8 to 12½. According to the manufacturer, they may be washed repeatedly, by hand or laundry equipment, and dry in time for re-use on the next shift.

Nonskid safety soles are reinforced with So-Lo-Prene rubber for long service.

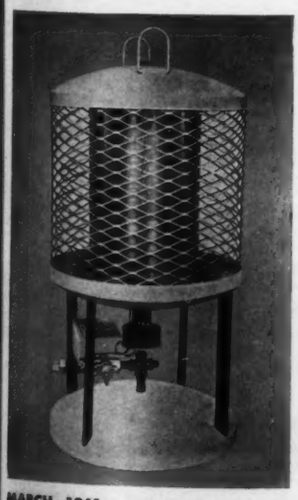
For further information write to the So-Lo Marx Rubber Co., Dept. C&E, Loveland, Ohio, or use the Request Card at page 18. Circle No. 71.

Infrared gas heater is rugged, portable

A portable, radiant gas heater available in 50,000 and 100,000-Btu capacities is announced by the Space-Ray Corp.

Solidly constructed to stand heavy use, the unit has a safety shutoff valve that automatically cuts off gas at the burner if the pilot flame goes out. The 100,000-Btu heater is 36 inches high, 18 inches in diameter, and weighs 50 pounds.

For further information write to the Space-Ray Corp., Dept. C&E, P. O. Box 3485, Charlotte, N. C., or use the Request Card at page 18. Circle No. 3.



No, that's not a rocket you see in the photo. It's a new-type disposal reactor, one of four installed at this site for the Metropolitan Sanitary District of Greater Chicago. Contractor on this phase of the $15 million project was Independent Construction Co. of Chicago.

problem: raise and set 165-ton, 75-foot sewage reactors

Solution: The AMERICAN 200-ton guy derrick at right lifted and placed four of these giant sewage disposal reactors in an average of 45 minutes each. Derrick was equipped with a 160-foot mast, and 110-foot boom; was powered by an AMERICAN Model 250 three drum air controlled hoist.

It's another example how AMERICAN can help you meet *any* lifting requirement . . . with crawler or rubber-mounted cranes, revolvers, derricks, hoists, or job-tailored equipment.

No other manufacturer offers this broad range of lifting equipment. It means you can look to AMERICAN for *unbiased recommendations* in matching your equipment to your job . . . big, small, special or routine. Talk over your equipment problems with your AMERICAN distributor. He's a good man to know.

D-201

AMERICAN

AMERICAN HOIST and DERRICK COMPANY
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EXCAVATORS ½ to 4½ yds. | CRANES 12½ to 110 tons | DERRICKS-HOISTS to 800 tons | REVOLVER CRANES to 400 tons | FORGED FITTINGS FOR WIRE ROPE AND CHAIN (Crosby-Laughlin Div.)

For more facts, use Request Card at page 18 and circle No. 318

Several types of tractor-mounted reel-carrying devices are available from Ateco to fit various job requirements.

Announce new cable and pipe-laying attachment

Designed to lay telephone or power cable and plastic, copper, or aluminum pipe and conduit without trenching, a new line of attachments for all popular makes of heavy-duty crawler tractors is available from the American Tractor Equipment Corp.

A special cable-laying shank mounted on the tool beam of the heavy-duty Ateco ripper reportedly opens up a cut and buries the cable or pipe in one continuous operation. Shanks for burial depths to 72 inches are available. Cable or pipe is carried on suitable reels; several types of tractor-mounted reel-carrying devices are offered by the company to suit various job requirements.

As a usual practice, one or two passes with a standard Ateco ripper shank are made ahead of the cable-laying pass, depending on soil conditions, according to the manufacturer.

For further information write to the American Tractor Equipment Corp., Dept. C&E, 9131 San Leandro Blvd., Oakland 3, Calif., or use the Request Card at page 18. Circle No. 8.

Vertical-boom trencher digs up to 1 foot wide

A heavy-duty utility trencher with a vertical boom is offered by the Century Engineering Co.

The boom enters the ground at a vertical angle, enabling the operator to work flush with walls, curbs, and sidewalks. With less cross-sectional area of the boom in the ground, steering is facilitated.

According to the manufacturer, the unit, known as the Century Trenchit, needs no trailer for transport. It quickly hitches to a car or pickup by means of hydraulic controls, and can be safely towed at highway speeds.

All operating functions of the Trenchit are hydraulically controlled. The unit digs 4 to 12 inches wide with variable, selective depths.

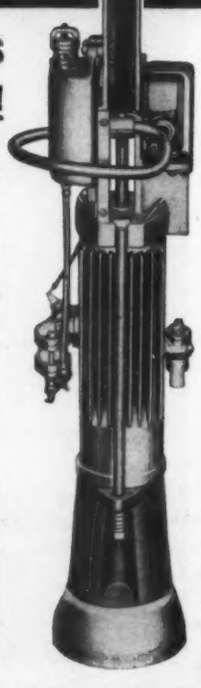
For further information write to the Century Engineering Co., Dept. C&E, 1117 Adams St., Waukesha, Wis., or use the Request Card at page 18. Circle No. 93.

Designed to dig 4 to 12 inches wide and to variable, selective depths, the Trenchit has a walking speed up to 2½ mph.

Where SPECIFICATIONS call for . . . . .

HIGH DEGREE SOIL COMPACTION

BARCO RAMMERS are THE ANSWER!



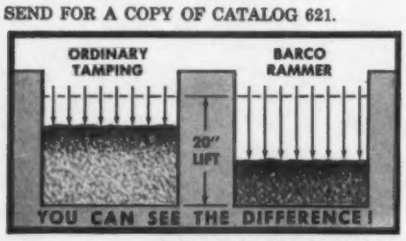
YOU can't get *high degree* SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

High degree soil compaction is worth every cent it costs. Barco Rammers are especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches.

ONE MAN OPERATION—On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18" trench backfill, using lifts up to 24", the rate is 360 to 600 feet per hour.

ASK FOR A DEMONSTRATION—We will be glad to arrange a demonstration for you; see our nearest distributor or write.

SEND FOR A COPY OF CATALOG 621.



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BARCO RAMMER *for High Degree Soil Compaction*
BARCO-VIBRA TAMP *for Granular Fill and Bituminous Surfacing*

For more facts, use Request Card at page 18 and circle No. 319

Where's your small engine PROBLEM?

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AIR COOLED MODELS— 2 TO 4½ BHP
WATER COOLED MODELS— 2 TO 8 BHP

Easy starting
Smooth running
Big engine features
in a compact package

—a precision product of the new Japan made to U.S. specifications by the world's largest manufacturer of small diesel engines

Immediate delivery from large U.S. stocks of engines, accessories and parts.

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CONTINENTAL MACHINERY CORP.

19402 So. Susana Rd., Compton, Calif. Mailing Address: P. O. B. 5309, Long Beach 5, Calif.

For more facts, use Request Card at page 18 and circle No. 320

Self-regulating flame is one feature of the automatic push-button aggregate drying system at the Suffolk Asphalt Material Corp., of Central Islip, N. Y. Once the control is set on the Hauck CLO dryer burner, the desired temperature reportedly is reached in a matter of minutes and remains at the proper level without supervision. Should the temperature drop below or rise above the stipulated level, the flame would increase or decrease to correct the deviation. For further information write to the **Hauck Mfg. Co.**, Dept. C&E, 124–136 Tenth St., Brooklyn 15, N. Y., or use the Request Card at page 18. Circle No. 9.

Machine lays deep curbs without use of forms

The High Curber is an automatic curbing machine said to be capable of extruding concrete or asphalt curbs from 12 to 24 inches high—without forms.

An automatic curbing machine designed to lay deep curbs without the use of forms and with a minimum of hand finishing is announced by Power Curbers, Inc.

Called High Curber, Model 700, the unit lays portland-cement concrete or asphalt curbs from 12 to 24 inches high. No forms are necessary as the curb assumes the final form as it is extruded from the machine.

The High Curber uses a relatively dry or stiff concrete mix at zero slump. In addition to forming the typical deep curbs, the machine can be used to extrude concrete crash barriers as wide as 18 inches on the base.

Speed of the machine is 3 to 5 fpm.

According to the manufacturer, adjustments in the machine allow it to negotiate contours, move up or down grade, and turn radii down to 12 feet. It is powered by a Wisconsin Model AGND engine developing 12.2 horsepower at 3,200 rpm.

For further information write to Power Curbers, Inc., Dept. C&E, P. O. Box 1097, Salisbury, N. C., or use the Request Card at page 18. Circle No. 70.

New pinning device secures ripper tips

A new 2-piece quick-change pinning device for securing tips on Cat No. 8 and No. 9 rippers can be installed or removed within one minute using only simple hand tools, the Caterpillar Tractor Co. announces.

In addition to the ease and simplicity of installation and removal, the new pins are said to be virtually unbreakable, having more than twice the strength of previous rivets.

Each semicircular pin is bent slightly at the center to achieve the locking effect, and is flanged at each end. Pins install back to back. Because of the inherent wedging action, they are installed or removed only one at a time.

The new units will fit all Caterpillar ripper shanks now in the field. However, new tips with elongated holes are required for these pins and are introduced concurrently.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card that is bound in at page 18. Circle No. 78.

RECENT S&H FOUNDATION INVESTIGATION PROJECTS IN THE PHILADELPHIA AREA

Photos courtesy of: The Ballinger Company • Architects and Engineers • Philadelphia, Pa.

SPRAGUE & HENWOOD, Inc. S&H
SCRANTON 2, PA.
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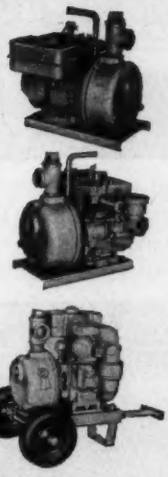
For more facts, use Request Card at page 18 and circle No. 321

*the pumps with more G's**

THESE ALL-NEW DESIGN CMC's



* **more Gallons per hour**
Will pump more water in less time — with less attending care — less maintenance.

* **more Get up and Go**
Faster, automatic, more reliable priming on even highest suction lifts.

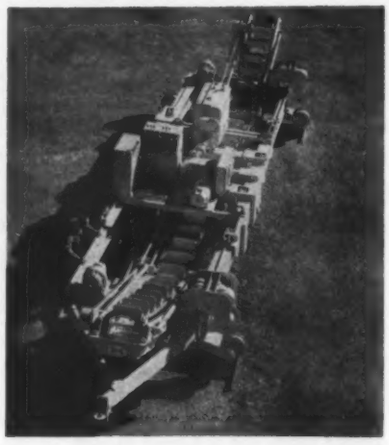
* **more Guts**
Simplified construction, fewer moving parts. Built to take roughest, toughest, day-in, day-out beating without breakdown.

EVERYTHING YOU COULD EVER WANT IN A CONTRACTOR'S PUMP! Ultra-compact, lightweight — yet more rugged to handle toughest pumping jobs with ease. Fewer moving parts for less maintenance, longer pump life. Designed so volute and impeller are removable and easily replaced in minutes. *AND YOU WON'T BELIEVE IT TILL YOU SEE IT . . . HOW FAST THESE NEW CMC'S WILL PRIME . . . AND HOW FAST THEY WILL MOVE WATER!* Contact your CMC distributor today and ask for a demonstration.

Or get full details on the complete line of CMC Contractor Pumps *. . . 1½" through 10" sizes . . .* by writing for *NEW CMC CONTRACTOR PUMP CATALOGS CPS-61, CPL-61* and *PFP-61.*

CONSTRUCTION MACHINERY COMPANY
WATERLOO, IOWA

For more facts, use Request Card at page 18 and circle No. 322



The Blaw-Knox Model SWS-200 subgrader has a standard cutting depth of 0 to 12 inches, the ability to adjust 2 inches above the top of 12-inch form depth, and 14 inches of height adjustment at each end truck, right, left, and simultaneously.

Power self-widening featured on subgrader

Equipped with power self-widening and a centralized push-button control panel, a new subgrader designed to increase accuracy has been introduced by the Blaw-Knox Co.

Other features of the new machine —Model SWS-200—are: precision cutting depth from 0 to 12 inches, and an easy-to-apply attachment capable of deeper penetrations; a 226-cubic-inch gasoline engine with electric starting; and electric and hydraulic crown control.

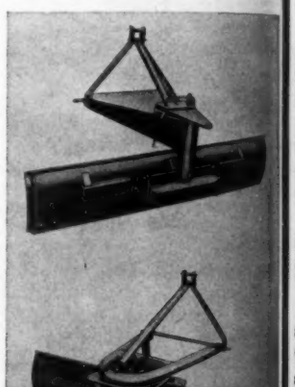
Power widening of the subgrader is in 4-foot increments from 12 to 28 feet, governed through the centralized panel of push-button electric and hydraulic controls. The automatic control system sets frame, conveyor, and cutter bowl up to a 4-foot adjustment. Beyond the 4-foot adjustment, it is necessary to add sections to extend the conveyor and center unit.

For further information write to the Blaw-Knox Co., Construction Equipment Division, Dept. C&E, Mattoon, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 72.

Announce two new models of rear scraper blades

Two models of rear scraper blades for use on 2-point and 3-point hitch tractors, are offered by Freeman Industries, Inc.

Both blades feature a ½-inch x 6-foot high-carbon-steel cutting edge that is reversible.



The Model 200 Freeman scraper blade and, below, the Model 100.

The Model 100 has seven forward angle adjustments and offsets 12 inches to right or left. It has a rib-reinforced tubular frame.

The Model 200 has nine forward angle adjustments, three pitch and three reverse adjustments, and tilts 15 degrees. It offsets 12 inches to right or left, and has a rugged box-constructed main frame.

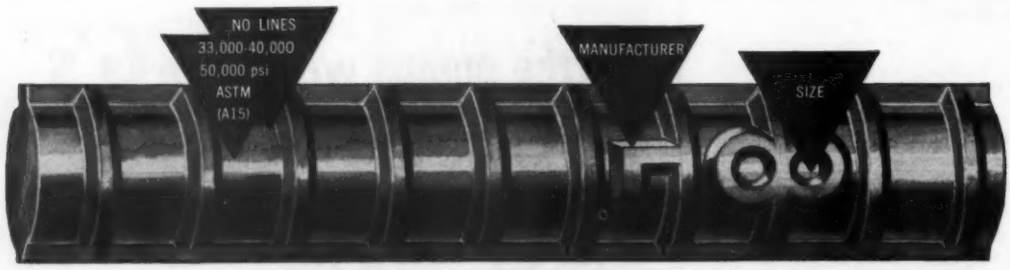
For further information write to Freeman Industries, Inc., Dept C&E, Blair Pike Road, Peru, Ind., or use the Request Card at page 18. Circle No. 28.

Two rear dumpers offered for extra-heavy duty

Two new rear dumpers have been introduced by Mack Trucks, Inc.

They are the M-45SX, a 45-ton 6-wheel unit designed to take a 30-yard body; and the M-30X, a 30-ton 4-wheel vehicle with a 20-yard body.

The M-45SX's front axle weighs more than 2,300 pounds and has a rated capacity of 32,000 pounds. It strong 7-inch-diameter tubular



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OF EVERY LACLEDE STEEL REINFORCING BAR

fast, easy identification saves construction time and cost

Metallurgical research has developed high-strength steels that substantially improve the efficiency and economy of reinforced concrete design — saving as much as 15% of the total construction cost of the structure.

Laclede now brings you this steel reinforcement in new, easy-to-identify bars that can be used with assurance under the Ultimate Strength design methods of the A.C.I. building code. With this positive identification, the worker can quickly find the right bar specified for the job. The clear marking of the grade of steel minimizes the need for inspection and testing.

Specify these time-saving, money-saving Laclede bars for your next construction job.

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QUALITY STEEL FOR INDUSTRY AND CONSTRUCTION

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6104

For more facts, use Request Card at page 18 and circle No. 323

Standard features for the Mack M-30X rear dumper include 18.00 × 25 tubeless 28-ply tires on 13.00 rims, 2-lever selective constant-mesh transmission with eight forward speeds and two reverse, and a 2-plate dry air-assist clutch.

struction is designed to accommodate the heaviest loads of extra-heavy-duty dumper service. Its wide 119-inch tread provides maximum stability and a turning circle of 75 feet, according to the manufacturer.

The M-45SX is powered by a naturally aspirated V-12 diesel engine that develops 450 horsepower at 2,100 rpm. Optional V-12 diesel engines range from 420 to 525 horsepower.

The M-30X features a 6-cylinder diesel engine that develops 320 horsepower at 2,100 rpm. A 380-hp diesel is optional.

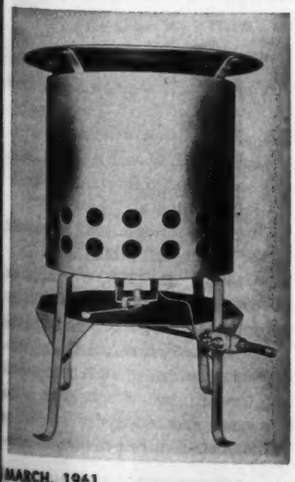
Write to Mack Trucks, Inc., Dept. C&E, 900 North Ave., Plainfield, N. J., or use the Request Card at page 18. Circle No. 59.

High-output salamander has automatic shutoff

A new series of high-output LP-gas salamanders that provide instant warm-up and feature an automatic safety shutoff has been announced by Weldit, Inc.

Designated Series 2000, these units deliver from 40,000 to over 150,000 Btu at 10 psi. Additional features include a manual burner control for maintaining desired temperature output, and a specially designed dish-shaped top for maximum heat distribution. Constructed of heavy-duty sheet metal, the new salamanders are 21½ inches high and weigh 26 pounds.

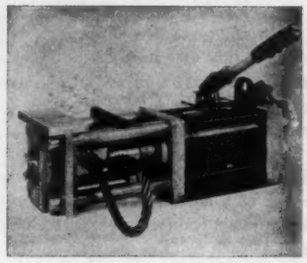
For further information write to Weldit, Inc., Dept. C&E, 990 Oakman Blvd., Detroit 38, Mich., or use the Request Card at page 18. Circle No. 94.



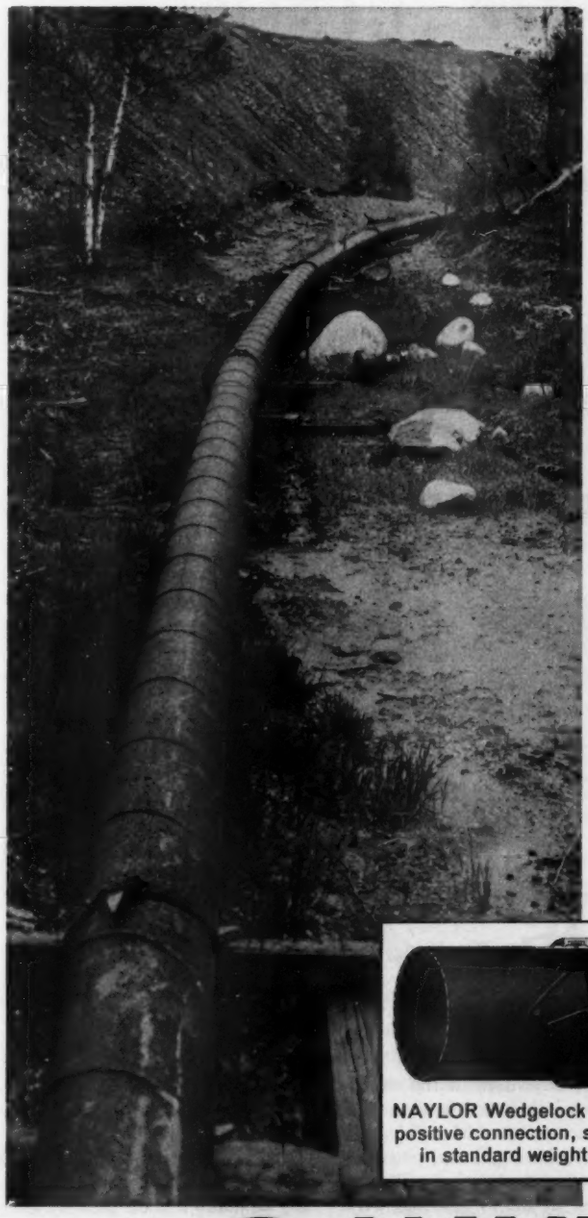
Unit for on-the-job cable processing

A small portable cable-processing unit that cuts and repairs cable, and makes slings, eyes, chokers, and splices right on the job is announced by Mark Naught, Inc.

Called the Mighty Mark, the machine is a self-contained, portable hydraulic press. The smaller model, weighing less than 70 pounds and measuring only 19 × 7¼ × 8½ inches in over-all size, exerts 15 tons of pressure and reportedly handles cable up to ½ inch under all types of conditions; the larger Mighty Mark handles cable from ½ inch up. According to the manufacturer, the machine can operate efficiently under water.



For further information write to Mark Naught, Inc., Dept. C&E, 322 Lumbermens Bldg., Portland 4, Ore., or use the Request Card at page 18. Circle No. 26.



HOW TO SIMPLIFY PIPE LINE INSTALLATIONS

To help you get the job done faster, easier and more economically, NAYLOR offers a pipe and coupling combination to simplify pipe line installations.

The characteristic lockseamed, spiralwelded NAYLOR structure gives you pipe that is light in weight without sacrifice of strength and safety. It's easy to transport, handle and install. You save time, trouble and money right down the line.

NAYLOR Wedgelock couplings fit into this economy picture, too. They simplify and speed connections since a hammer is the only tool required to connect or disconnect them, and joints can be made up with only one side of the pipe in the open.

For air, water and ventilating service, it will pay you to consider this dependable NAYLOR pipe and coupling combination.

NAYLOR Wedgelock couplings make a positive connection, securely anchored in standard weight grooved ends.

Write for Bulletin No. 59.

NAYLOR PIPE Company

1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

For more facts, use Request Card at page 18 and circle No. 324

Newly improved crane is fully convertible

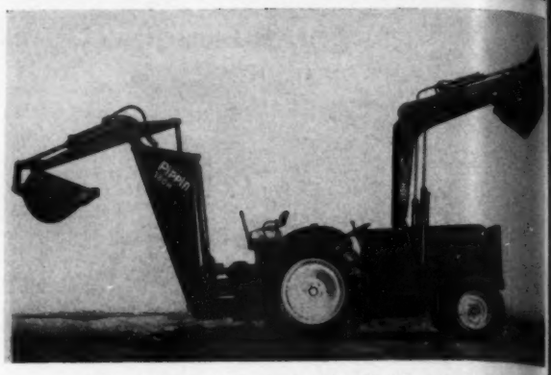
The ability to lift 100 tons at 15-foot radius is claimed for Manitowoc's newly improved Model 3900 crane, which is fully convertible to dragline or clamshell applications.

Among the many new features is the lightweight inverted-angle boom made of a special new alloy. Simple boom insert connections with a single bolt at each point permit fast in-the-field addition or removal of extra boom sections.

The new 3-piece counterweight is removed by the machine itself without the use of jacks, blocking, or other cranes. Another feature is the dynamic load-control device that consists of a hydraulic retarder with heat exchanger, and a reversing mechanism with clutch and air controls. This unit provides power lowering of full 100-ton load at lowering speeds comparable to hoisting speeds.

The crane can be carried on standard railroad flatcars, within ordinary rail clearances, by removing only crawler units, boom, and back hitch.

For further information write to the Manitowoc Engineering Corp., Dept. C&E, 16th and River Sts., Manitowoc, Wis., or use the Request Card at page 18. Circle No. 48.



The redesigned Pippin Model 360-H backhoe, shown here with the new Pippin Model 335-H front-end loader, is said to be adaptable to wheel tractors of any make or model.

Two models available in new backhoe line

A newly designed line of backhoes has been introduced by the Windsor Pippin Corp.

Designated Models 260-H and 360-H, these backhoes are for use with light or medium tractors and medium or heavy tractors, respectively.

The redesigned line now features a chrome-nickel molybdenum boom bracket for added strength, plus improved hydraulic cylinders for increased digging power. According to the manufacturer, these backhoes are adaptable to any make or model of tractor.

For further information write to the Windsor Pippin Corp., Dept. C&E, Windsor, Vt., or use the Request Card at page 18. Circle No. 95.

Reverse alarm offered for heavy equipment

The E. D. Bullard Co. announces its Bull/Horn—a mechanical backup alarm for use on graders, tractors, scrapers, and other units of construction machinery.

The company points out that because of its mechanical design the Bull/Horn can be used at any time, whether or not the motor is running, and that no maintenance is required.

For further information write to the E. D. Bullard Co., Dept. C&E, 2680 Bridgeway, Sausalito, Calif., or use the Request Card at page 18. Circle No. 13.

Announce new line of rotary drills

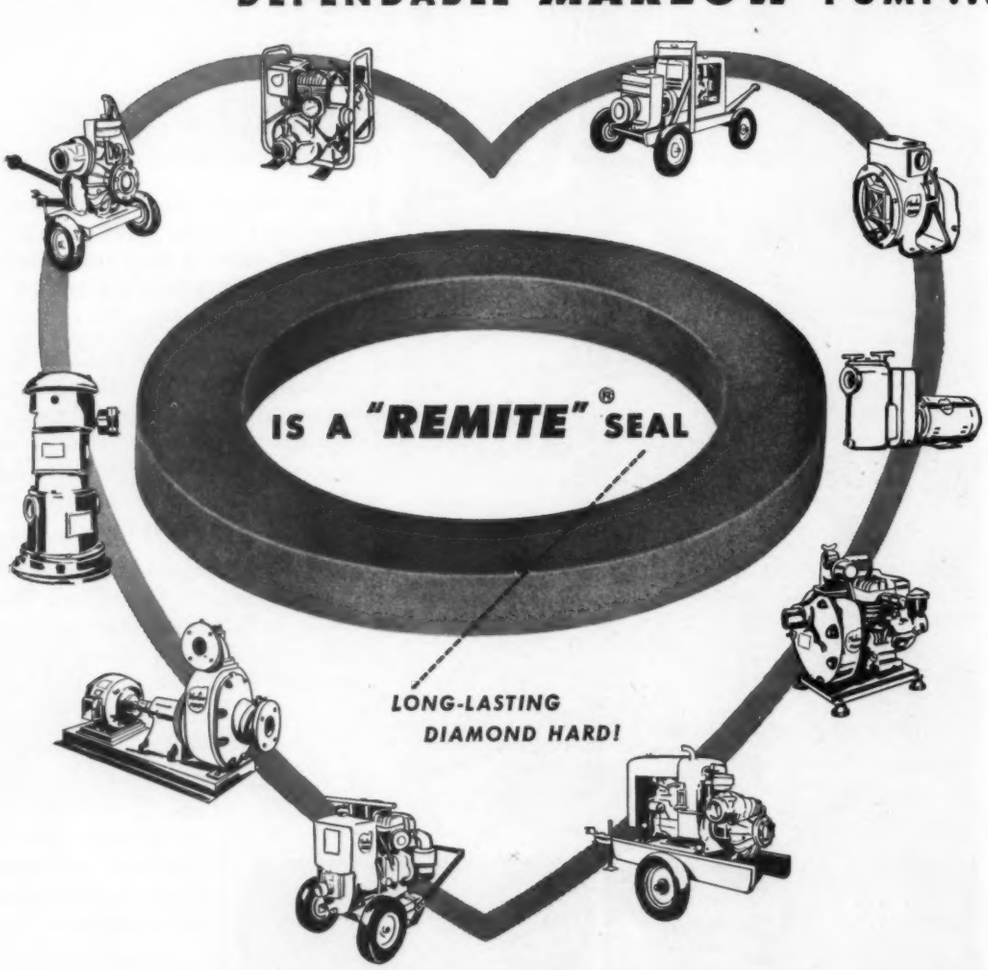
Le Roi announces a powerful new line of mechanical-drive rotary drills for bit sizes of 3 to 4½ and 6 to 7⅞ inches. Designated Models LRD-2 and LRD-3, these units are truck, crawler, or wheel-mounted for rotary or down-the-hole drilling.

Through a series of gear reductions in the drive shaft which build up a high torque, the LRD-3 maintains steady drilling action and constant rpm on the bit at low engine speeds.

The driller can adjust to the formation being drilled with a choice of ten forward and two reverse speeds between 9 and 168 rpm.

The LRD-2, a one-man rig, drills

THE *HEART* OF EVERY DEPENDABLE *MARLOW* PUMP...



Yes, Marlow's mechanical shaft seal is designed to keep the liquid where it belongs—inside the pump casing and not in the bearings or on the floor! A unique material, called "Remite," that was developed in the Research Laboratories of Bell & Gossett, helps make this possible. Remite is a material that is almost as hard as a diamond and is compatible with almost every liquid. Both of these properties help to make Marlow's mechanical shaft seal virtually leakproof and one of the finest available anywhere in the world.

This premium seal is standard equipment on all of Marlow's self-priming centrifugal and end-suction centrifugal pumps. This is just one of many reasons why Marlows offer a dependable and reliable solution to every pumping problem. Because it is self-lubricating, routine maintenance is almost completely eliminated.

Today, research by Marlow and Bell & Gossett is constantly striving to make a good product even better to serve you with ever increased efficiency.

9-627

Marlow PUMPS®

MARLOW PUMPS

DIVISION OF BELL & GOSSETT COMPANY

MIDLAND PARK, NEW JERSEY

Morton Grove, Illinois • Longview, Texas

For more facts, use Request Card at page 18 and circle No. 325

On the Le Roi LRD-3, power from the drive shaft is transmitted to the drill string through a 3-fluted kelly and top-drive gear case. Top drive permits the operator to add pipe to the string from the drill-pipe magazine without coming out of the hole.

a 3 to 4½-inch hole with rotary or down-the-hole tools to a depth of 25 feet without changing pipe. Holes to 100-foot depth can be drilled by adding drill pipe.

For down-the-hole drilling, the rotary table can be raised 16 inches. This saves drilling time in hard rock formations and permits down-the-hole tools to be inserted without drilling a preliminary hole with a rotary bit.

A gasoline or diesel engine supplies the power.

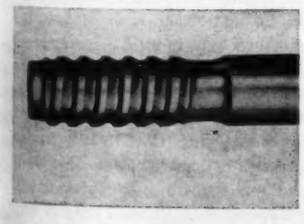
The LDR-3, a 6 to 7⅜-inch drill, transmits power from the engine through the subdrive case and transmission to the drive shaft.

Three hydraulic jacks with a 36-inch stroke keep the rig level during drilling operations.

For further information write to the Le Roi Division, Westinghouse Air Brake Co., Dept. C&E, Sidney, Ohio, or use the Request Card at page 18. Circle No. 43.

Wide threads available on drilling accessories

HL-16 and HL-17 threads are now available on the complete Brunner & Lay line of long-hole drilling accessories—carbide Rok-Bits, extension steel, couplings, and striking bars.



The wide HL threads are designed for maximum wear, tight connections, greater rod rigidity, and easy hand uncoupling.

For further information write to Brunner & Lay, Inc., Dept. C&E, 9300 W. King St., Franklin Park, Ill., or use the Request Card at page 18. Circle No. 10.

General-service bodies for three chassis sizes

A complete new line of general-service bodies, conversion kits, and side boxes for use on ½, ¾, and 1-ton pickup-truck chassis is announced by the Utility Division of Highway Trailer Industries, Inc. The bodies are available for all popular makes of trucks, including those with dual rear tires.

The Model HB general-service body is constructed of rustproof galvanized steel. Inside floor space is 48½ inches wide, with lengths of 75 to 104 inches depending on the chassis. Over-all width is 77½ inches; height is 42 inches over all and 29 inches from floor to top. Side boxes are 14½ inches deep.

Side boxes for general-service bodies have three compartments. Horizontal and front compartment can be supplied with or without adjustable shelves or trays.

For further information write to Highway Trailer Industries, Inc., Utility Division, Dept. C&E, Stoughton, Wis., or use the Request Card that is bound in at page 18 of this issue. Circle No. 68.

"CALL FOSTER . . . THEY RENT PILING PLUS"

One call to Foster delivers all the piling you need—"plus" all necessary driving accessories, at fixed, low rental rates.

No need to tie up capital in piling inventories, or "make do" with substitute sections: you get exact sections and exact lengths when you use Foster's Piling Rental Plan. Whether it's a rush job or a routine order, we will deliver promptly all standard piling sections, corners, crosses and tees from our nationwide warehouses and field stocks.

For help with your piling requirements, and for highway and construction products, call the Foster specialist near you.

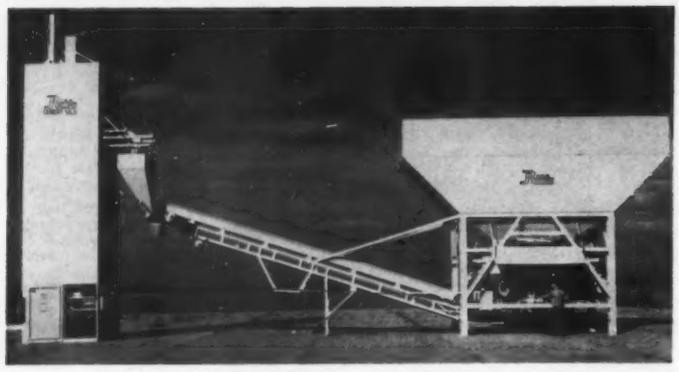
Write **L. B. FOSTER CO.** for new 24 page Piling Catalog CE-3

PITTSBURGH 30, PA. • NEW YORK 7, N. Y. • CHICAGO 4, ILL.
HOUSTON 2, TEX. • LOS ANGELES 5, CAL. • ATLANTA 8, GA.

Faster From Foster

Rental Steel-Sheet Piling • Pipe Pile • H-Pile • Lightweight Piling • Pipe • Rail

For more facts, use Request Card at page 18 and circle No. 326



Designed to produce up to 100 yards of concrete per hour, the Ross Porta-Plant Model 60-7 incorporates a 7-yard weigh batch bin into a 60-ton portable overhead plant.

New aggregate plant is highly mobile

A new mobile aggregate plant has been announced by the Ross Porta-Plant Co. It is known as the Model 60-7.

The plant incorporates a 7-yard weigh batch bin into a 60-ton portable overhead plant. It is designed to increase the 60-ton overhead storage to 105 tons by the addition of a bin extension. Easy to transport, it can be erected in approximately four hours.

Featured in the design is a belt feeder running the length of the weigh batch bin. This system empties the bin onto an individual conveyor, making it possible to incorporate the 7-yard weigh batch bin in a 1-unit plant of legal highway-travel dimensions.

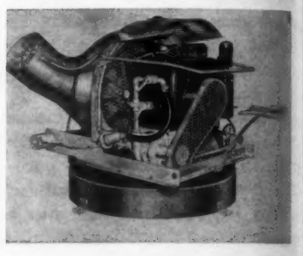
The plant's capacity is 100 yards of concrete an hour with proper allied equipment, states the manufacturer.

For further information write to the Ross Porta-Plant Co., Dept. C&E, Box 446, Brownwood, Texas, or use the Request Card at page 18. Circle No. 83.

Blower acts as bellows in land-clearing fires

A big blower designed to act as bellows in the burning of logs, stumps, and brush in land-clearing operations is offered by the Besler Corp.

Called Turn-A-Spray, the unit produces 29,000 cfm of air and may be rotated 360 degrees horizontally and



from level to vertical. It may be bolted onto a flat-bed truck or trailer.

One man operates the Turn-A-Spray. All controls are electrical. (Hand operation is optional.)

According to the company, the large column of air, when bounced from the ground into a fired log pile, will burn green wood.

For further information write to the Besler Corp., Dept. C&E, 4053 Harlan St., Emeryville, Oakland 8, Calif., or use the Request Card at page 18. Circle No. 4.

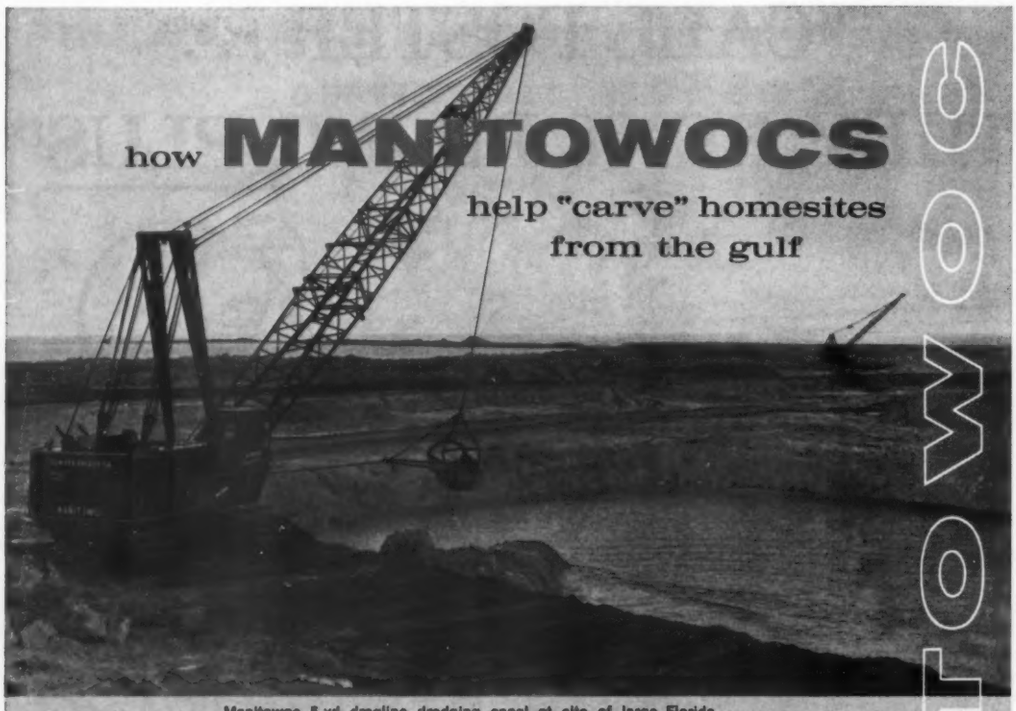
Heavy-duty truck chassis for off-road operations

Chevrolet has introduced a new heavy-duty chassis option designed to meet the severe demands of off-the-road operations.

Available for 2 and 2½-ton models on 157 and 175-inch wheelbases, the chassis is built to meet punishing torsional and weight stresses imposed by heavy-load operation over rough terrain.

Frame strength and rigidity are increased by heavier-gage side rails and inner liners and by full-length reinforcements. Repositioning of torsion bar anchors to a frame crossmember location minimizes torsional strain. Adding still more strength are a tubular cross member and double-gusseted cross member at the fore and aft rear-spring hangers, respectively.

Another important feature of the new option is use of an alligator jaw-



Manitowoc 5-yd. dragline dredging canal at site of large Florida real estate development. In the background is a 4-yd. Manitowoc.

Acres of land are being moved into the sea on the West coast of Florida for the construction of a huge new real estate development. Contractor for the massive reclamation job — over 3200 acres are involved, 75% to be built into the Gulf of Mexico — is the Sumner Sollitt Co. of Chicago, under contract to the Flor-A-Mar Development Corp.

In the first step of construction dikes are built 30 feet wide and 15 feet above the high tide level. Two parallel dikes extend straight into the Gulf for about one mile, and half-a-mile apart. A third dike seals off the enclosure except for a sluice through which most of the water drains at low tide. Immediately after draining, the sluice is closed off and the remaining water pumped out.

Among the equipment on the job are a Manitowoc Model 4500 dragline with a 5-yd. bucket and 140 feet of boom, and a Model 3900 using 80 feet of boom with a 4-yd. bucket. Besides being used for dike construction, both machines excavate material for homesites within the dike perimeter and dig canals 100 to 200 feet wide and 10 to 30 feet deep, providing each homesite with navigable water frontage. Canal routes are dynamited from the bottom of the Gulf, which is solid marl and limestone rock in this area. The 5-yd. Manitowoc moves up to 3000 yds. daily of this tough material, despite the hard digging and need for frequent machine moves. Doing identical work, the Manitowoc 3900 has also racked up an impressive output record.

On any size job a Manitowoc can produce outstanding yardage for *you*. A call to your distributor will bring full details on the complete line of Manitowoc excavators, cranes, and truck cranes.

2-P

Manitowoc

MANITOWOC ENGINEERING CORP.
(A subsidiary of The Manitowoc Company, Inc.)
Manitowoc, Wisconsin

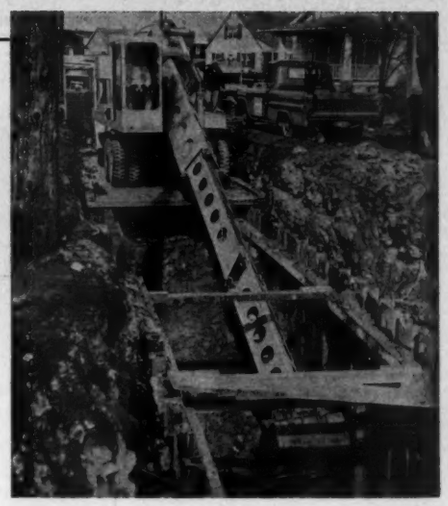
SHOVELS	CRANES	DRAGLINES	TRENCH HOES
1¼ — 6 YDS.	25 — 125 TONS	1¼ — 7 YDS.	1¼ — 3 YDS.

For more facts, use Request Card at page 18 and circle No. 327

type cross member in place of the conventional X center member. The change reportedly affords higher frame-beam strength and more flexibility for the heavy loads and twisting stresses encountered in most off-highway hauling.

Also included are a heavy-duty 5,000 or 7,000-pound front suspension system, 4,000-pound-capacity front springs, 11,500-pound-capacity rear springs, and 2,000-pound-capacity auxiliary rear springs.

For further information write to the Chevrolet Motor Division, General Motors Corp., Dept. C&E, General Motors Bldg., Detroit 2, Mich., or use the Request Card at page 18. Circle No. 64.



Excavating heavy wet clay from a sheeted trench was an exacting task for this Warner & Swasey Gradall. The machine was working on a platform resting on the sheeting approximately 3 feet below ground level. By using an 8-foot boom extension, the operator maneuvered over and under the braces and dug the additional 13½ feet required, leaving a smooth bottom for placing the 48, 54, and 60-inch pipe. This job is a section of the $2 million Metropolitan District Commission water system that will tie in service for the cities of Malden and Medford, Mass. Prime contractor and machine owner is the Construction Service Co., of Bound Brook, N. J. The machine is shown working along Wellington St., Malden. For further information write to **The Warner & Swasey Co.**, Gradall Division, Dept. C&E, 5701 Carnegie Ave., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 39.

3 SUCCESSIVE WORLD'S BATCHING RECORDS...

AND STILL THE CHAMP!

The BUTLER TX-4 Roadbuilders Plant

World's Records for highway batching were made with the BUTLER TX-4 in 1958, 6,029 lineal feet; in August, 1960, 7,250 feet; and again in the same month, 8,036 feet. All laying slab 24 ft. wide and 9 inches thick. And all by Denton Construction Co., Michigan.

That's mighty conclusive proof of the profit-making superiority of BUTLER Automation. The TX-4 can be completely actuated by the truck drivers themselves, or if required, by only one operator.

And the TX-4 is so scientifically accurate, so completely error-proof and trouble-free it *could* act as its own inspector.

Perhaps you don't need such a high-level of production. The TX-4 will exactly match your batching needs for one, two, three, four (or more) pavers. It's just a matter of the number of batchers for your contract requirements.

The Most Portable of All...

All components—bins, batchers and structural members are unitized for easy handling and transport. All wiring and piping are in place, ready for instant hook up. You'll want a complete description to know how the TX-4 will fit perfectly into your jobs, so send for the new TX-4 bulletin now — and get ready for a bigger profit this year.

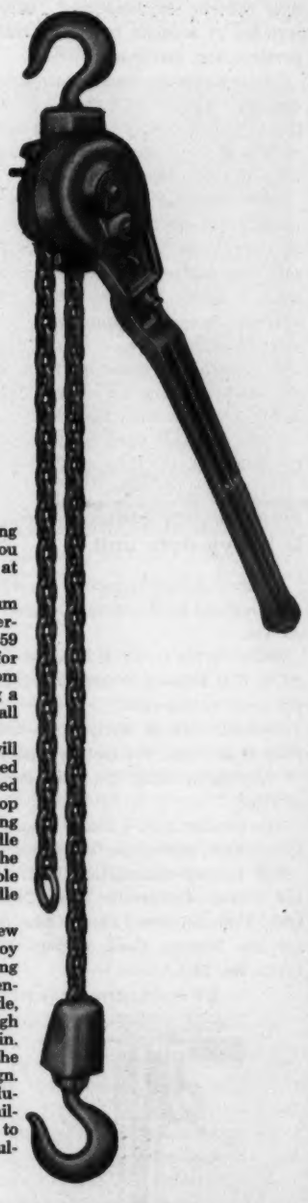
BUTLER BIN COMPANY

971 Blackstone Ave. ◆ Waukesha, Wis.

3192

For more facts, use Request Card at page 18 and circle No. 328

Again Coffing Brings You a New Line of Hoists



For the second time in less than a year Coffing has introduced a new hoist line to give you easy, safe, positive efficient lifting power at moderate cost.

The new RA Series Safety Pull Aluminum Ratchet and Pawl Lever Hoist is easy to operate—requires minimum handle pull—only 59 pounds for the ¾-ton model to 97 pounds for the 6-ton model. It may be operated from either side and the design prevents freezing a load. Load rotation is easy because of ball thrust bearings in the load hook assembly.

Safety has been built into the hoist. It will not ratchet under load if handle is released nor will it free chain. Controls are protected from inadvertant shifting. The bottom stop eliminates any hazard from the handle being released unintentionally and prevents handle from being moved to a position parallel to the load chain which would develop undesirable twisting action. The exclusive safety handle bends to indicated overload.

Strength without excess weight in the new hoist is achieved by a special aluminum alloy which is used in the body and handle. Long service life has been provided by the high tensile material in the chain retaining guide, heat treated load sheave and the plated, high tensile, heat treated alloy steel link chain. Maintenance is held to a minimum by the rugged construction and simplicity of design.

The new Coffing RA Series Safety Pull Aluminum Ratchet and Pawl Lever Hoist is available in six models with capacities from ¾ to 6 tons. Ask your distributor or write for Bulletin ADH-868.

COFFING HOISTS

DUFF-NORTON COMPANY

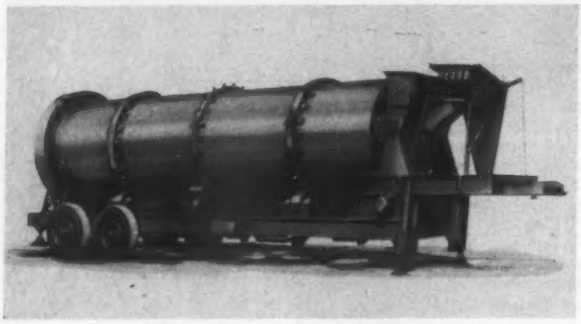
Four Gateway Center • Pittsburgh 22, Pa.

COFFING HOISTS
Ratchet Lever • Air
Hand Chain • Electric

DUFF-NORTON

DUFF-NORTON JACKS
Ratchet • Screw
Hydraulic • Worm Gear

For more facts, use Request Card at page 18 and circle No. 329



One of the dryers in the new, expanded Barber-Greene Dryerpac line, the Model DC-65 is 30 feet long with a drum diameter of 8 feet.

Offer new, expanded line of dryer-dust collectors

Barber-Greene announces a new, expanded line of Dryerpacs (dryer-dust collector combinations), which includes 27 capacity ranges, in both portable and stationary models.

The new combinations feature drum diameters and lengths from 5 × 20 feet to 9 × 30 feet; 3 to 12-cone dust collectors; and air-flow capacities from 12,500 to 54,000 cfm.

Each Dryerpac is available with a number of options, including three different drum air-flow capacities to suit every asphalt plant, regardless of make or model. Capacity ranges are available in small increments to beyond 350 tph.

For further information write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 63.

New paving breaker is heavy-duty unit

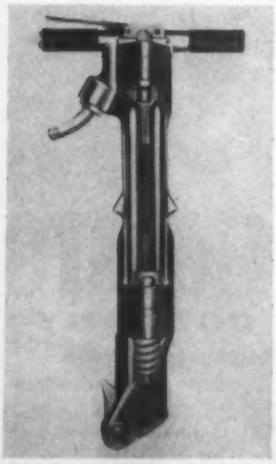
A new heavy-duty paving breaker is announced by the Davey Compressor Co.

Known as the Davey-Holman Model SS25, it is reputed to possess a high power-to-weight ratio.

Features include heavy alloy-steel front head, bolts, and springs capable of standing up under the most severe service.

The breaker is 31½ inches long, 14 inches wide, and weighs 87 pounds.

For further information write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 74.



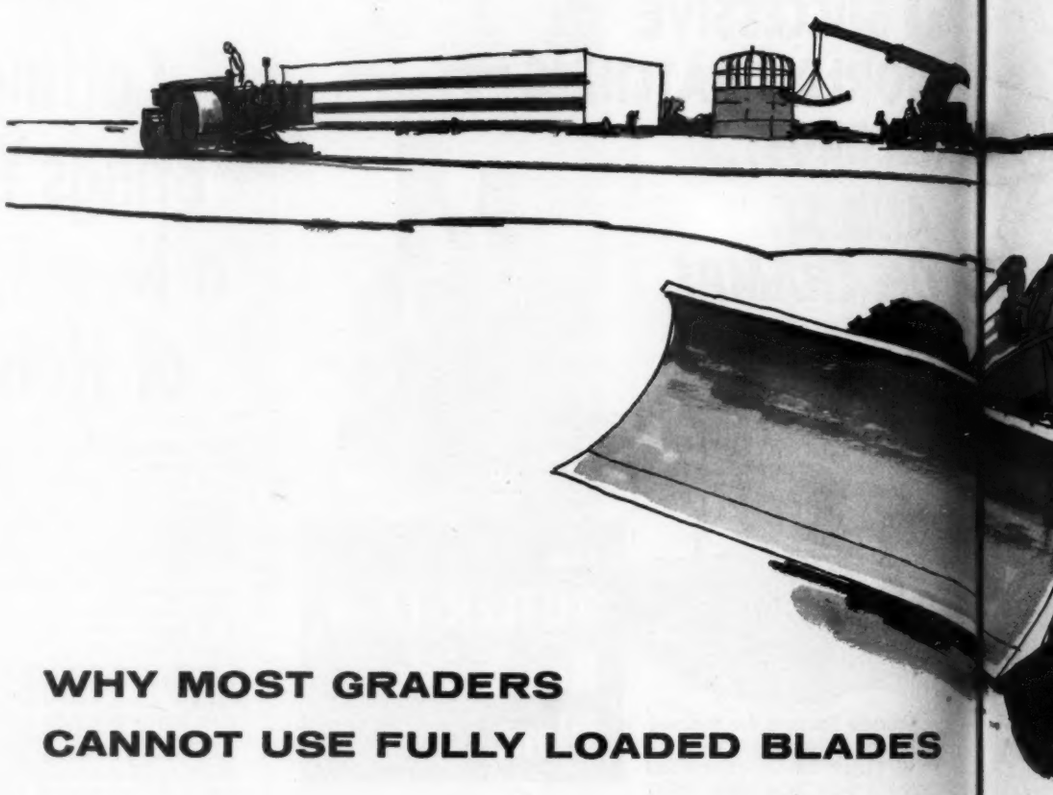
Compaction control, a feature of the new Dotmar paver, is accomplished by variable-speed drive on the propelling crawler-drive mechanism.

This curbing paver requires no forms

An asphalt or concrete curber that does not require forms or rails is announced by Dotmar Industries, Inc.

Reinforcing longitudinal rods, pins, or stakes, or a combination of pins and rods, can be used with the machine. Pins can be inserted in the pavement and horizontal rods placed on top of the pins, as the machine will straddle them and compact the material around them. The machine will clear rods and pins up to 4 inches

AUSTIN-WESTERN PRODUCTS SAVE TIME AND MONEY



WHY MOST GRADERS CANNOT USE FULLY LOADED BLADES

With a fully loaded blade it would be nearly impossible for them to work ahead in a straight line and yet move material the maximum distance. Sidethrust can toss ordinary graders about like corks. Not so with Austin-Westerns. For you can use every single inch of A-W's 13-ft. blade length to move more material farther and faster . . . always in a straight line . . . than with any other grader. *Why?* Because of all-wheel drive and all-wheel steer. No front-end dead weight means balanced power at the blade. Rear steers, too, so operator can offset the machine to eliminate all sidethrust at the toe of the blade to permit use of its full length.

An A-W is the one machine contractors can use for both rough and finish grading. Hydraulically controlled; side-shifting moldboard slips nimbly around stakes and forms. Completely controlled from cab; no linkages to change. 9 models; 4 and 6-wheel machines—weights to 30,000 lb., power ranges to 165 hp. *Make us prove* the time and money savings advantages of an Austin-Western. Just write.

above the pavement. If a longitudinal rod only is used, it can be inserted into the curb by special means provided.

A major feature of this machine is compaction control. This is accomplished by variable-speed drive on the propelling crawler-drive mechanism.

The machine is simple to guide and has a convenient crawler speed adjustment within easy reach. Trowels for curb of several different shapes or sections are available.

For further information write to Dotmar Industries, Inc., Dept. C&E, 502 Hanselman Bldg., Kalamazoo, Mich., or use the Request Card at page 18. Circle No. 102.

New blasting machines are lightweight units

Two new blasting machines are offered by Vibration Measurement Engineers, Inc.

The VME-Sr. is a 450-volt unit that weighs 15 pounds and has a recommended capacity of 50 caps in straight series for primary blasts and 200 caps in straight series for secondary blasts. Fifty caps reportedly can be shot in straight parallel, and 1,200 in series parallel arrangements.

The VME-Jr. is rated at 225 volts and weighs 8 pounds. Its recommended capacity is 30 caps in straight series for primary blasts and 100 caps in straight series for secondary blasts.

In series parallel, 240 caps can be shot. The VME-Jr. is not recommended for straight parallel shooting.

In addition to the small size and the light weight, a special feature of the VME blasting machines is the maintenance contract obtainable with each unit. Under this contract all units are returned annually for a factory overhaul, or for interim emergency repairs, for the cost of replacement of batteries or condensers only. All labor costs and replacement of other parts are covered by the maintenance agreement.

For further information write to Vibration Measurement Engineers, Inc., Dept. C&E, 725 Oakton St., Evanston, Ill., or use the Request Card at page 18. Circle No. 60.

Hopper-car vibrators cut unloading time

The new units in the Navco HCP line of heavy-duty air vibrators for unloading covered railroad hopper cars are announced by the National Air Vibrator Co.

According to the manufacturer, Navco long-stroke units cut unloading time on covered hopper cars, and eliminate "clean-out" of cars after emptying.

The 3-inch piston size is 14¼ inches long, weighs 68 pounds, and consumes 18 cfm at a recommended air pressure of 40 to 60 psi. The 4-inch piston size is 17½ inches long, weighs 115 pounds, and consumes 29 cfm at a recommended air pressure of 40 to 60 psi.

For further information write to the National Air Vibrator Co., Dept. C&E, 2372 W. Seventh St., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 96.

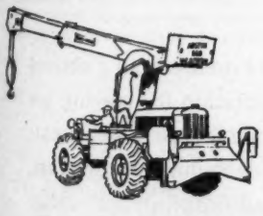
Add new machine to concrete-grinder line

The Equipment Development Co., Inc., announces the addition of the Edco Hydro Grinder to its line of concrete-grinding equipment.

A 2-hp single-phase electric motor powers this 275-pound grinder. Neoprene-mounted, self-adjusting, counterrotating disks are said to eleminate torque and vibration.

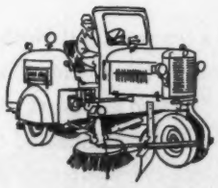
Scarifying attachments to roughen or clean concrete slabs are also available for use on the Hydro Grinder.

For further information write to the Equipment Development Co., Inc., Dept. C&E, 2700 Garfield Ave., Silver Spring, Md., or use the Request Card at page 18. Circle No. 27.



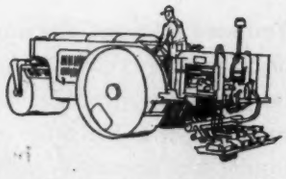
A-W HYDRAULIC CRANES

5 models. Capacities to 11 tons. Self-propelled and truck or stationary mounting. "Live" hydraulic booms. Booms extend up to 48 ft.



A-W MOTOR SWEEPERS

2 models: 2-yd. Model 40; 4-plus Model 60. Safe, easy front steer; full visibility. Simplified design; broom and hopper in rear.



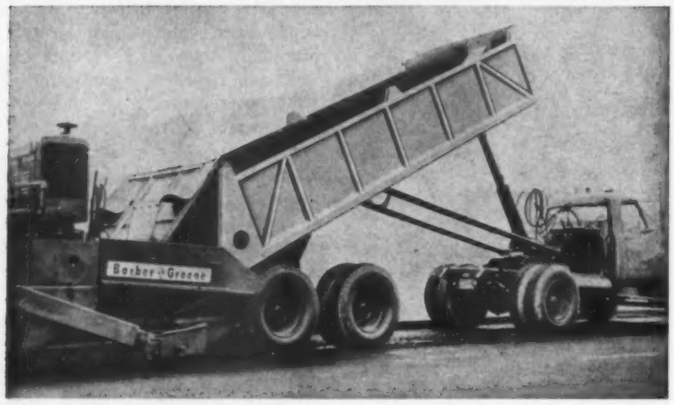
A-W COMPACTION EQUIPMENT

Variable weight 2 and 3-wheel rollers to 14 tons; 3½-6 ton portable; Roller-Compactor; vibratory attachment for most 3-wheelers. Also new 9-wheel Pneumatic Roller.

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

For more facts, use Request Card at page 18 and circle No. 330



The Challenge-Cook Stabilift is said to be especially suited for working with asphalt and concrete pavers.

New end-dumper available in capacities to 30 tons

Challenge-Cook Bros., Inc., announces its Stabilift end-dump semi-trailer.

The unit is available in single and 2-axle models, and in legal payload capacities from 18 to 30 tons. It can be used for ordinary dump and fill work, stockpiling, and spreading. It is also said to be especially suited for working with asphalt and concrete paving machines.

For further information write to Challenge-Cook Bros., Inc., Dept. C&E, 3334 San Fernando Road, Los Angeles 65, Calif., or use the Request Card at page 18. Circle No. 8.

All-purpose barricade features simple design

A new all-purpose barricade is available from Barricade Engineering.

The unit has no bolts, nuts, or screws, and no special tools are required for field erection or dismantling. According to the manufacturer, it is adaptable to any use presently required of barricades.

This unit is sturdily constructed of heavy 10-gage steel, and stands on square tubular-steel legs.

For further information write to Barricade Engineering, Division of Atlas Metal Parts Co., Dept. C&E, 3232 N. 31st St., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 77.

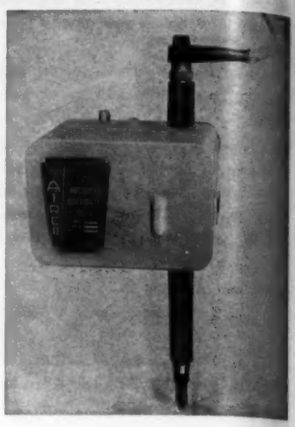
Check-in pads offered for pump maintenance

Check-in pads designed to provide a comprehensive list of points to be checked when a McGowan or other make of self-priming pump comes off the job are available from McGowan Pumps.

According to the company, by answering the questions and following the simple tests, maintenance men can quickly check each pump for any danger signs indicating improper use and care.

For further information write to McGowan Pumps, division of Leyman Mfg. Corp., Dept. C&E, 10944 Kenwood Road, Cincinnati, Ohio, or use the Request Card at page 18. Circle No. 38.

Two automatic units for welding process



The Air Reduction Sales Co. has available two new automatic units for use with Airco's Heliweld (tungsten-inert-gas) welding process.

These Heliweld automatic units, designated Models HMH-D and HMH-E, are electronically controlled and can be used for either ac or dc Heliwelding, without an accessory control, and using argon, helium, or mixtures of these shielding gases as required.

They are identical with one exception, the Model HMH-D is equipped with 3 and 12-inch offset bars to which the machine holder can be attached. Principal advantages

THE USEFULNESS OF A LIMA

HOW TO KEEP A JOB ON SCHEDULE

You need machines that work... and *keep* working! Nothing's more useless than a shovel or crane that's "down" when you need it most. Limas have a reputation for staying on the job. They're predictable because they *do* the work you schedule for them. You can count on them. Limas are better built, better engineered for dependable high production, trouble-free operation; favored by users everywhere to outdig, outlift and outlast other makes. Lima quality features include:

- Precision air control—insuring maximum production under the most adverse conditions; permitting feel of the load, instant response.
- Antifriction bearings at all important bearing points, including drums, brake and clutch housings.
- All gears, smaller parts and shafts are flame or induction hardened for longer life.
- Versatility—insuring *plus* value. Limas are not adaptations of single-purpose machines. Each is designed and built for top efficiency, long life with any front end.
- Design flexibility assuring complete transportability; easily dismantled to legal weights.

Call your Lima distributor and arrange to see a Lima at work. Or write us for details.

6101

of the machines are sensitivity and response to changes in arc length; touch or high-frequency starts; 360-degree rotation in any position with a 2-inch adjustment of the machine holder across the weld bead; and vertical travel distance of 14½ inches.

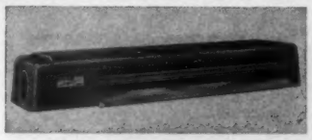
These automatic units can be operated at a maximum of 500 amp continuous-duty cycle, dc straight polarity using thoriated tungsten electrodes, or 350 amp ac. Electrode diameters from .010 inch through 3/16 inch may be used. Holders have a maximum vertical rate of rise of 24 inches per minute.

For further information write to the Air Reduction Sales Co., a division of the Air Reduction Co., Inc., Dept. C&E, 150 E. 42nd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 33.

Speed-control dial added to whiteprinter

A new speed-control dial has been added to the Blu-Ray portable rotary diazo whiteprinter.

A faster motor steps up the speed of the machine 50 per cent, enabling it to print at a rate of from 4 inches to 6 feet per minute. This wider speed range makes possible the handling of slow sepia paper or the faster printing papers now being introduced.



The Blu-Ray machine is said to copy anything typed, written, drawn, or printed on any translucent material up to 42 inches wide and of any length. Papers are developed in an ammonia tube or in the new Blu-Ray rotary dry developer.

For further information write to the Reproduction Engineering Corp., Dept. C&E, 680 Plains Road, Essex, Conn., or use the Request Card at page 18. Circle No. 21.

Calibrating load cell has 100-ton capacity

Forney's, Inc., announces a new hydraulic load cell designed specifically for spot checking and recalibrating plant and job-site testing machines and other apparatus equipped with pressure gages. It is said to be particularly effective for checking and calibrating large pipe-testing machines.

Consisting of a completely sealed hydraulic unit equipped with a self-aligning pressure plate, and two load indicators, the load cell has a gross weight of 240 pounds.

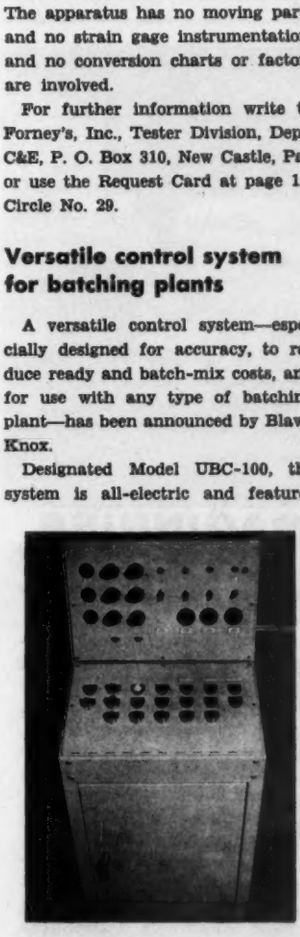
The loading capacity of the standard unit is 200,000 pounds, and larger units are available on special order. The apparatus has no moving parts and no strain gage instrumentation, and no conversion charts or factors are involved.

For further information write to Forney's, Inc., Tester Division, Dept. C&E, P. O. Box 310, New Castle, Pa., or use the Request Card at page 18. Circle No. 29.

Versatile control system for batching plants

A versatile control system—especially designed for accuracy, to reduce ready and batch-mix costs, and for use with any type of batching plant—has been announced by Blaw-Knox.

Designated Model UBC-100, the system is all-electric and features



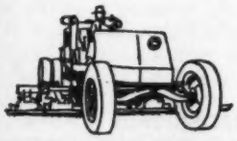
push-button control. According to the manufacturer, the system is particularly effective when used in combination with the Uni-Rect-designed truck-mixer loading plant.

The control panel is arranged to permit convenient, positive, and rapid operation; it also allows material-selection verification through visual reading of dial scales. The system is designed for any number of presets and materials, and for simultaneous or accumulative batching.

The system is mounted in a dust-tight, drip-proof enclosure, and is available in either console or cabinet style.

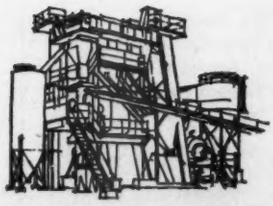
For further information write to the Blaw-Knox Co., Construction Equipment Division, Dept. C&E, Mattoon, Ill., or use the Request Card that is bound in at page 18. Circle No. 62.

There's a Lima type and size for you—shovels to 8 yd.; crawler cranes to 140 tons, truck cranes to 80 tons, wagon cranes to 75 tons; draglines variable. Interchangeable front ends. Gasoline, diesel or electric power.



LIMA MODEL D ROADPACKER—Six vibrating shoes consolidate fast, deep for profitable single-course construction; available in 12-shoe Super model.

LIMA AUSTIN-WESTERN portable and stationary crushing, screening and washing equipment; including jaw crushers, roll crushers, feeders, screens, elevators, conveyors, bins.



LIMA MADSEN ASPHALT PLANTS—available in models with batching capacities from 1000 to 10,000 lb.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division · Lima, Ohio

BALDWIN · LIMA · HAMILTON

For more facts, use Request Card at page 18 and circle No. 331

Lightweight burners operate on LP gas

Two compact, lightweight LP-gas Jet Flame burners—the 3½-pound Model CW-2 with 600,000-Btu capacity and the 5½-pound Model CW-3 and 1-million-Btu capacity—are available from the Corwill International Corp.

The manufacturer states that no pumping or preheating is required and that the burners, which are simple to operate, will stay lighted under any conditions.

The units can be used in batteries for big jobs or as handy portable torches for many purposes.

For further information write to the Corwill International Corp., Dept. C&E, P. O. Box 1030, Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 97.

Ac-dc inert-gas welders have broad welding range

Two all-purpose ac-dc, inert-gas-shielded-arc welding machines have been announced by Hobart Bros. Co.

The Model ADI-2641 is rated at 200 amp, the Model ADI-3641 at 300 amp. By changing a switch, or by the use of simple plug-in controls and accessories, they can be used for manual, automatic, tungsten-inert-gas, inert-gas spot or gas-shielded-arc consumable electrode welding.

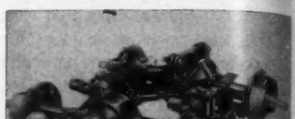
Both models have broad welding ranges that permit welding with as little as 1 amp of welding current. Model ADI-2641 has a welding range of 1 to 300 amp ac or 1 to 350 amp dc. Model ADI-3641 has a welding range of 1 to 375 amp ac or 1 to 410 amp dc.

The fact that there are no cables to change is a convenient feature of the machines, the manufacturer points out. Welding cables for both TIG and metal-arc welding remain permanently connected, as a separate terminal provides for connecting the TIG torch. The operator merely flips a switch to choose between the two welding methods.

Both machines are designed for operation from single-phase 230/460 ac power.

For further information write to the Hobart Bros. Co., Dept. C&E, Hobart Square, Box 8129, Troy, Ohio, or use the Request Card at page 18. Circle No. 36.

New tandem rear axles are through-drive units



The International Harvester Co. has available three new through-drive tandem rear axles.

Increased carrying capacity, simplified design, and standardization of components reportedly are features common to all three new axles, which are offered in rated capacities of 30,000, 34,000 and 38,000 pounds. Steel spring or rubber load-cushion suspension models are available.

The new axles are offered for heavy-duty International trucks ranging from 30,000 to 53,000 pounds gvw, and from 35,000 to 79,000 pounds gcw, in conventional, cab-forward, and cab-over-engine designs.

For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card that is bound in at page 18. Circle No. 24.

MAGINNISS POWR-PACTORS

patch asphalt faster!

Maginniss *vibratory* compactors speed placing and patching of blacktop . . . are easily moved from job to job . . . work fast, at speeds up to 50 ft. per minute. Water feed prevents asphalt adhesion . . . assures smooth finish.

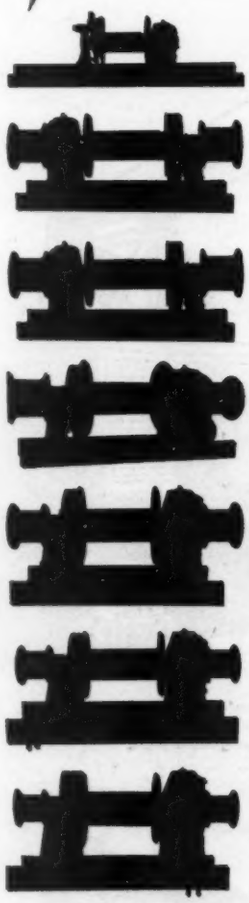
Put Maginniss Powr-Pactors to work on your blacktop jobs. The increased production, lower costs and small initial investment will surprise you. Call your Maginniss distributor today! Maginniss Power Tool Company, 154 Distl Avenue, Mansfield, Ohio. AA-9821

MODEL PP-18 POWR-FACTOR with water feed attachment. Up to 7,000 vpm, 4,000 lbs. adjustable force, gasoline powered.

Maginniss Power Tool Company Dept. CE-100
154 Distl Ave., Mansfield, Ohio
Yes, I want to know more about the Powr-Factor for asphalt work.
name_____
address_____
city_____ zone_____ state_____

For more facts, use coupon or circle No. 332

Check these **BRADEN** models *for your truck winch needs*



MS3 SERIES Particularly well adapted for use on all light duty jobs handling loads up to 8,000 pounds. For behind cab mounting.

MS5 SERIES Rugged models rated at 15,000 pounds capacity. Equipped with Braden's special Oil Cooled, Fully Adjustable Automatic Safety Brake.

MS8 SERIES These models, rated at 20,000 pounds, are among the most popular winches in America. They are designed for low speeds, so are ideal for heavy handling jobs that require perfect load control.

MS12 SERIES The smallest of the Braden heavy duty models with a 30,000 pound capacity. They are especially adaptable for commercial elevator hoists and heavy duty trucking.

MS18 SERIES Very similar to the MS12 models except capacity is 45,000 pounds. The Braden Oil Cooled, Fully Adjustable Automatic Safety Brake is standard equipment on this series.

MS30-2DB SERIES A big baby designed for use on 2½ to 5 ton trucks. It has a rated capacity of 60,000 pounds, and has smooth, steady pulling power with stamina to spare.

MS50-2DB SERIES Here is the greatest capacity truck winch ever built on a production line. It has been tested to handle loads up to 100,000 pounds, and is designed to work perfectly on trucks of 5 tons or more.

Above are a few of the many BRADEN Truck Winches available from stock. In addition you may select underslung front end models, friction clutch winches, extended double drum units, as well as many varieties of custom designed models for special handling jobs. Write for complete information.

BRADEN WINCH DIVISION OF MOTOR PRODUCTS CORPORATION
P. O. BOX 547 • BROKEN ARROW, OKLAHOMA

"In Service Around the World"

For more facts, use Request Card at page 18 and circle No. 333

Giant land-clearing unit crushes trees to pulp

A highly portable machine for land-clearing contractors is offered by R. G. LeTourneau, Inc.

Known as the Series G-40 Tree Crusher, this unit is equipped with three electrically powered 6-foot-diameter steel rollers. It weighs 42 tons. At a speed of 3 mph, it reportedly can roll down trees at the rate of 5 acres per hour.

A 20-foot-wide push bumper applies leverage over 10 feet up on the tree to break the root system free of the ground. As the tree falls, the blade-studded rollers perform their work, leaving a compressed mat of chopped trees and brush for in-place burning.

The unit is 39 feet 10 inches in length, 20 feet wide, and 15 feet high. Electric power for roller drive motors and power steering is supplied by a diesel-engine-driven ac generator and a dc generator. A single rheostat unit controls speed, power, and braking while a fingertip switch controls steering.

For further information write to R. G. LeTourneau, Inc., Dept. C&E, 2399 S. MacArthur, Longview, Texas, or use the Request Card at page 18. Circle No. 58.

Electrically powered, blade-studded rollers give the LeTourneau Series G-40 Tree Crusher tremendous traction to roll down, chop, and compress trees and vegetation into a compact mat.

Theftproof warning light has 400-hour signal life

The new Dietz Visi-Flash No. 610-FS transistorized warning light has been designed to increase both the day and night effectiveness of cones in traffic-control work.

Producing 8-beam candlepower through 4-inch optical lenses, the No. 610-FS has a signal life of 400 hours, using four ordinary "D" flashlight batteries. The signal flash lasts one-tenth of a second and pulsates 65 times per minute.

A theftproof feature is the 30-inch steel chain attached to the battery-case cap. When the unit is placed in a traffic cone, the chain hasp is ramset to the pavement.

The new unit is available with either red or amber lenses.

For further information write to the R. E. Dietz Co., Dept. C&E, 225 Wilkinson St., Syracuse 1, N. Y., or use the Request Card at page 18. Circle No. 22.

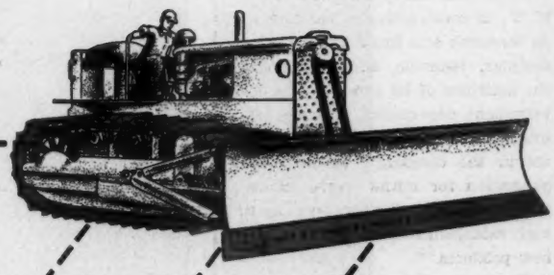
Factory Representative Wanted

An experienced salesman in the construction machinery field to take on Industrial Cab Company as an additional account. This position will require contacting tractor distributors in Eastern Canada, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, Maryland, Ohio and other states, if possible, approximately twice a year.

INDUSTRIAL CAB COMPANY
36 Jefferson Avenue
Salem, Massachusetts

REDUCE COST AND DOWNTIME . . . WITH

RENEWABLE SPROCKET RIMS



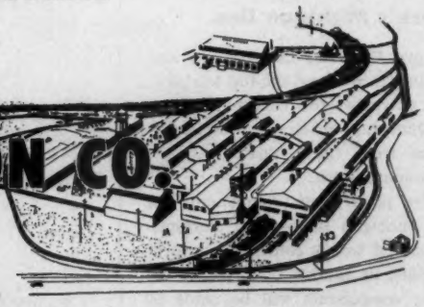
TISCO®
TRACTOR REPAIR PARTS

TRACTOR PADS

END BITS

DOZER BLADES

Made of tough Manganese Steel which "improves with age" becoming harder from impact and the stress and strain of machine operation, Tisco Sprocket Rims, Tractor Pads, End Bits and Dozer Blades are designed to give longer service life and greater economy of operation - - **WRITE TODAY FOR BULLETIN 1-59** which describes how worn sprockets can be readily reclaimed; how it has been possible for special design features to be incorporated into Tisco Tractor Pads and how Tisco End Bits and Dozer Blades resist abuse and abrasion.



TAYLOR-WHARTON CO.
DIVISION OF HARSCO CORPORATION
Established 1742
HIGH BRIDGE 18, NEW JERSEY
PLANTS: Cincinnati, O. — Birmingham, Ala. — Easton, Pa.
SALES OFFICES: New York — Chicago — Milwaukee — San Francisco

For more facts, use Request Card at page 18 and circle No. 334

This Highway-Interconsult dry-bulk transporter features a highly efficient pneumatic unloading system to discharge cement and sand at the reported rate of 5 to 8 barrels per minute.

Sand, cement transporter unloads pneumatically

A dry-bulk truck-trailer using an advanced pneumatic unloading system has been introduced by Highway Trailer Industries, Inc.

The Highway-Interconsult transporter, designed for the movement of cement and sand, combines spherical vessels, pneumatic discharge system, and power auxiliaries in a lightweight monocoque-type trailer. A wide range of sizes is available to meet state highway restrictions and fit special applications.

The spherical all-welded vessels are made in 300, 340, and 400-cubic-foot sizes. Semi and 4-wheel trailer combinations are available to provide capacities up to 80,500 pounds.

The pneumatic discharge incorporates an injection system, and is

Atlas Copco merger

■ Atlas Copco Eastern, of Paramus, N. J., and Atlas Copco Pacific, San Carlos, Calif., have merged their combined facilities to form a new organization known as Atlas Copco, Inc.

Johns-Manville builds at research center

■ Johns-Manville Corp., New York, N. Y., is constructing a building at its Research and Engineering Center complex, Manville, N. J., to house the activities of its new-business development department. The department was created two years ago within the company's research organization for initial semi-commercial production, introductory sales, and establishment of markets for new products.

The 1-story structure will have 54,000 square feet of operating space, including offices and a new and enlarged plastics laboratory. One entire wall will be used for continuous applied research in field-testing new wall-panel products developed by the research organization.

Pipe-lining firm expands services

■ Pipe Linings, Inc., Wilmington, Calif., a subsidiary of American Pipe & Construction Co. of Los Angeles, has made its services available to the midwest and eastern states and to eastern Canada with the establishment of new headquarters in New York City. The eastern operations will function in cooperation with the National Water Main Cleaning Co.

Pipe Linings, Inc., specializes in the rehabilitation of water lines in place with cement mortar linings, using the Spunline and Tate processes.

Japanese firm produces Clark's Michigan line

■ Toyo Umpanki Co., Ltd., is now producing in Japan the full Michigan line of rubber-tire construction and earthmoving machinery under license from Clark Equipment Co., Buchanan, Mich.

The power-train components for the Michigan line—axles, transmissions, and torque converters—will be supplied by Clark's U. S. plants. All other components will be made by Japanese companies.

MORE WORK POWER

Reduced friction through use of tapered roller bearings in all Allis-Chalmers crawler tractors makes the difference in work power and profit for you!

All Allis-Chalmers crawler tractors roll on tapered roller bearing truck wheels. Most others still use bushings.

Anyone who remembers his roller skating days knows the performance advantages of bearings over bushings. The difference between first and also-ran was in the wheel bearing. This friction-reducing advantage is the reason railroads all over the country have turned to *roller* freight.

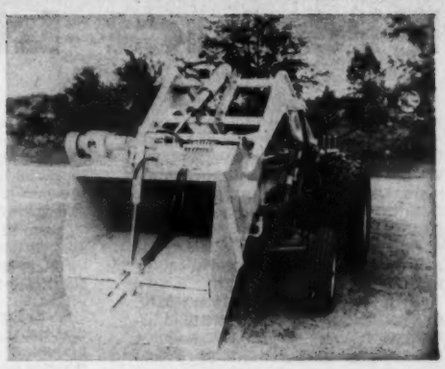
The same principle applies to tractors ... much more power is being wasted by friction-type plain bushings. It's one of the reasons the 225-HD-21, on tapered roller bearings, produces ... alongside the biggest tractors you can buy. Can ...

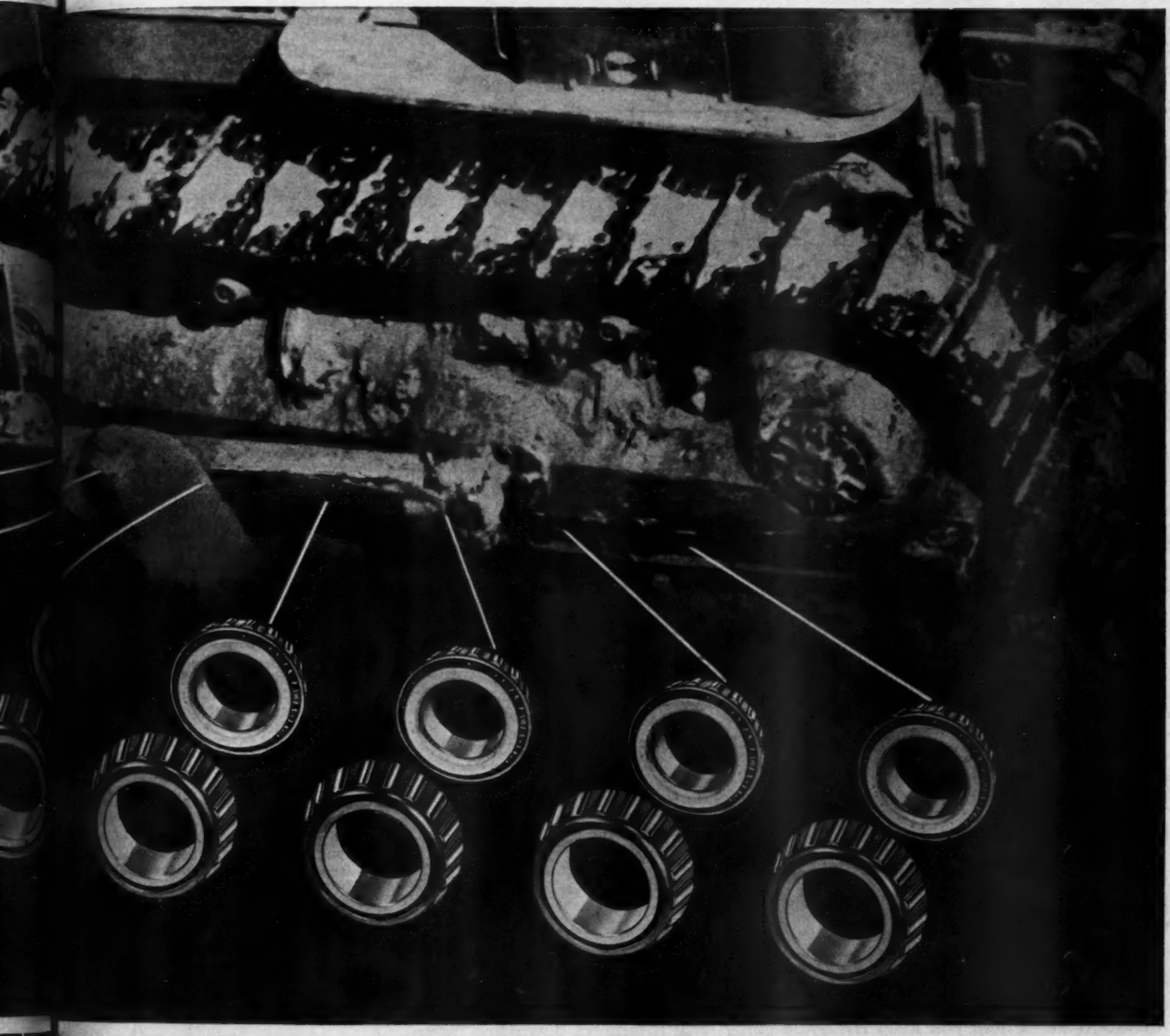
move ahead wit...

designed to provide rapid, positive discharging without damaging flowback, yet allow the operator to regulate discharge flow as desired. The pneumatic unloading system will empty 5 to 8 barrels per minute, according to the manufacturer.

For further information write to Highway Trailer Industries, Inc., Dept. C&E, 250 Park Ave., New York 17, N. Y. or use the Request Card that is bound in at page 18. Circle No. 67.

A specially designed front-end-loader bucket said to quickly and thoroughly mix concrete, mortar, plaster, and road-patch mixes, the Dotmar Porta-Mix is hydraulically controlled by the tractor operator. The unit is shown here mounted on an International 460 tractor equipped with an International-Wagner 260 front-end-loader unit. Material to be mixed is picked up by the bucket, or batched into it, and mixed en route to the job. According to the manufacturer, the Porta-Mix can also be used for many of the jobs usually handled by a front-end-loader unit. For further information write to **Dotmar Industries, Inc.**, Dept. C&E, 502 Hanselman Bldg., Kalamazoo, Mich., or use the Request Card at page 18. Circle No. 73.





. . PER HORSEPOWER

continue to pay for power that *never* produces—that gets "lost" in old-fashioned bushings?

Your Allis-Chalmers dealer will be glad to discuss this and the many other advantages that keep the HD-21 on the go shift after shift with a minimum of maintenance. Ask about the *toughest track ever built* . . . the *industry's healthiest engine* and *certified permanent lubrication*. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wis.

Now available in Persian Orange or Allis-Chalmers Yellow at no extra cost.

ALLIS-CHALMERS

power for a growing world

For more facts, use Request Card at page 18 and circle No. 335

Product Literature

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Gasoline engine—a booklet illustrating and describing the Allis-Chalmers Model G-138 gasoline engine. Cutaway drawings show major construction features. Power-unit and engine specifications, installation dimensions, and data on optional equipment included.

Write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 54.

Hoist, puller—literature describing the Griphoist Tirfor portable multipurpose hoist or pull unit. According to the brochure the Griphoist, a manually operated unit, is conservatively rated at 3,300 pounds single line pull, and with block and tackle handles 6 tons and more. On-the-job photographs illustrate text, and specifications are furnished.

Write to Griphoist, Inc., Dept. C&E, 744 Harrison St., San Francisco 7, Calif., or use the Request Card at page 18. Circle No. 57.

Tractor repair parts—a folder discussing Tisco tractor repair parts, including renewable sprocket rims, tractor pads, end bits, and dozer blades. Illustrated with photographs.

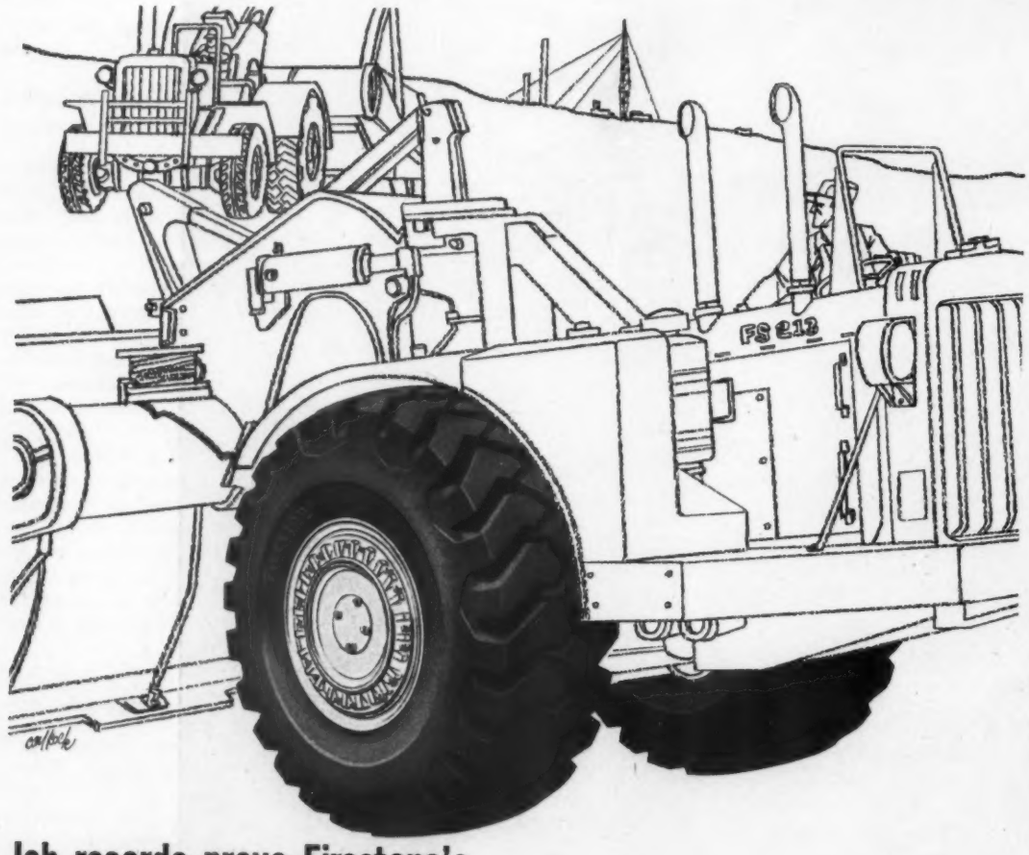
Write to the Taylor-Wharton Co., division of the Harsco Corp., Dept. C&E, 110 E. 42nd St., New York, N. Y., or use the Request Card at page 18. Circle No. 86.

Warning lights, barricades—a catalog covering the Esco line of transistorized warning lights and barricades. Photographs, drawings, brief specifications. Form No. EF760.

Write to the Electronic Specialties Co., Dept. C&E, Island Ave., Batavia, Ill., or use the Request Card at page 18. Circle No. 35.

Truck mixer—a bulletin describing the Rex Model 77 truck mixer. Features stressed include simplified 2-speed, in-line transmission with 2-lever control. Bulletin No. 6177P.

Write to the Chain Belt Co., Dept. C&E, 4701 W. Greenfield Ave., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 15.



Job records prove Firestone's

2-WAY PLAN KEEPS PAYLOADS MOVING!

1. Firestone Giant Tires help you keep the cycle going with minimum downtime losses. Firestone off-the-highway tires are toughened by Shock-Fortified nylon cord to resist impact. With exclusive Firestone Rubber-X they're the longest-wearing Firestone off-the-highway tires ever built.

2. Firestone Giant Tire Service Experts match and fit Firestones to your equipment, large and small, for top on-the-job performance. And it never ends! These men provide 24-hour maintenance for every Firestone tire on the job.

To learn how this 2-Way Giant Tire Plan helps cut operating costs see your Firestone Dealer or Store. Or, write: Manager, Off-The-Highway Tires, The Firestone Tire & Rubber Company, Akron, Ohio. Always Specify Firestone Tires When Ordering New Equipment.

Tune in Eyewitness to History every Friday evening, CBS Television Network

Firestone

BETTER RUBBER FROM START TO FINISH

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For more facts, use Request Card at page 18 and circle No. 336

Blacktop distributors—a bulletin covering the features of the Etnyre Model FX-500 blacktop distributor. Describes and illustrates single-axle and tandem-axle truck and trailer models. Features described in detail are the new Etnyre heat-jacketed pump, the full-circulating turn-up spraybar, and the Etnyre circulating system. Bulletin No. 500.

Write to E. D. Etnyre & Co., Dept. C&E, 200 Jefferson St., Oregon, Ill., or use the Request Card at page 18. Circle No. 56.

Tractor towing—literature describing the Larson Tractor Tow, a specially designed trailer for towing tractors easily and at high speeds. This unit is said to accommodate all makes of tractors. Illustrated with drawings and photographs.

Write to the Larson Machine Co., Dept. C&E, Princeville, Ill., or use the Request Card at page 18. Circle No. 46.

Clamshell buckets—a folder describing and illustrating McCaffrey all-welded clamshell buckets. Covers the Type D for general-purpose digging; Type R for general rehandling work; Type L for stockpiling sand and small gravel; and the firm's rock tongs available in 10 and 20-ton-capacity models. Specifications are included. Bulletin No. 558.

Write to M. P. McCaffrey, Inc., Dept. C&E, 2121 E. 25th St., Los Angeles 58, Calif., or use the Request Card at page 18. Circle No. 49.

Spreader—literature describing the Hydro-Spreader Model B, a one-man-operated, all-purpose hydraulic spreader for ice control and seal coating. General specifications and photographs. Bulletin H-4.

Write to the Central Engineering Co., Inc., Dept. C&E, 4429 W. State St., Milwaukee 8, Wis., or use the Request Card at page 18. Circle No. 98.

Barricade—a fact sheet on the Pendergast Guard-Gate, a safety barricade said to instantly extend to its full length, yet collapse to inches for easy storage. This unit is available in 4, 6, and 8-foot models.

Write to the Albert W. Pendergast Safety Equipment Co., Dept. C&E, 6913 Tulip St., Philadelphia 35, Pa., or use the Request Card at page 18. Circle No. 45.

Sand pump—a bulletin describing the use of Wemco sand pumps for handling sand slurry, abrasive pulps, heavy-density media, and slimes. Includes a disassembly and maintenance photo sequence, as well as a performance table for the various size pumps. Bulletin P7-B21 and P7-B22.

Write to Wemco, division of the Western Machinery Co., Dept. C&E, 650 Fifth St., San Francisco 7, Calif., or use the Request Card at page 18. Circle No. 88.

Rear-dump trailer—a fact sheet on the Athey Model PR619 pneumatic-tire rear-dump trailer for use with the Cat No. 619 tractor. Photographs, drawings, specifications. Form No. PR-204-A.

Write to the Athey Products Corp., Dept. C&E, 5631 W. 65th St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 99.

Construction blasting—"Vibrations from Construction Blasting," a 24-page booklet, discusses those vibrations that are unique to construction blasting and the consequent safe vibration limits for structures in their path. Analyzes the effectiveness and performance of various types of explosives and explosive arrangements in relationship to the resultant crater area and rock jointing.

Write to the Hercules Powder Co., Inc., Dept. C&E, Hercules Tower, 910 Market St., Wilmington 99, Del., or use the card at page 18. Circle No. 44.

Truck crane—a catalog describing the Unit Model 1014 truck crane. Rated as a 15-ton-capacity lift crane and as a ⅝-yard excavator, the Model 1014 is said to be easily convertible to dragline, clamshell, trench hoe.

Write to the Unit Crane & Shovel Corp., Dept. C&E, 6411 W. Burnham St., Milwaukee 19, Wis., or use the Request Card that is bound in at page 18. Circle No. 53.

Concrete side-dumper—a catalog on the Dumpcrete side-dump 6-cubic-yard-capacity body for hauling non-agitated concrete. Diagrammatic drawings show important features of the unit, including driver control of discharge. On-the-job photographs.

Write to the Maxon Construction Co., Inc., Dept. C&E, 2600 Far Hills Ave., Dayton 19, Ohio, or use the Request Card at page 18. Circle No. 101.

Jaw crusher—a bulletin covering the salient features of Universal Engineering's Model 4848 overhead eccentric jaw crusher. According to the literature, this unit has a top rated capacity of up to 950 tph set at 12 inches. Bulletin No. 132–60A.

Write to the Universal Engineering Corp., Dept. C&E, 625 "C" Ave. N.W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 87.

Pumps—a specification sheet on Midland Model 30M and Model 40M self-priming contractors' pumps featuring capacities of 30,000 and 40,000 gph, respectively. Points out that these versatile pumps are self-cleaning, utilizing the sweeping action of the liquid to clean or remove solids from the bottom of the pump case.

Write to Midland Products Co., Dept. C&E, Mahwah, N. J., or use the card at page 18. Circle No. 50.

Crawler-loader—an illustrated bulletin on the Minneapolis-Moline McTrac crawler-loader package. Features listed include: 59-hp crawler, 9-foot dumping height, 1¼-cubic-yard bucket, 8,500-pound breakout force, and 4,500-pound lift capacity. Full specifications furnished. Bulletin No. 1066.

Write to Minneapolis-Moline, Dept. C&E, 130 Ninth Ave. S., Hopkins, Minn., or use the Request Card at page 18. Circle No. 75.

Excavator—a well illustrated booklet on the Caterpillar 922 Series A Traxcavator. Stresses performance, operator safety and convenience, ease of servicing, and versatility. Specifications furnished. Booklet No. 34004.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 14.

Cement transport—literature on the Baughman Model PMCT-1 cement transport, which features self-unloading by both pneumatic and mechanical means. Complete specifications. Bulletin A-455.

Write to the Baughman Mfg. Co., Inc., Dept. C&E, 192 Arch St., Jerseyville, Ill., or use the Request Card at page 18. Circle No. 7.

Tractor replacement parts—a catalog describing and illustrating Tri-State replacement parts for tractors. Covers a wide variety of parts for Allis-Chalmers Models HD-19 and HD-20, Caterpillar D-6, D-7, and D-8; International TD-18-A and TD-24. Catalog No. TR 1255.

Write to the Tri-State Tractor Parts Co., Inc., Dept. C&E, 1822 N.W. 25th Ave., Portland 10, Ore., or use the Request Card at page 18. Circle No. 89.

Premixed mortar—literature discussing the use of Embeco premixed mortar as a method of achieving tough, strong, nonshrink water-resistant joints and masonry repairs. Includes complete illustrated instructions. Also contains data on comparative compressive-strength test results. Bulletin EPMM-2B.

Write to The Master Builders Co., Dept. C&E, 2490 Lee Blvd., Cleveland 18, Ohio, or use the Request Card at page 18. Circle No. 16.

Concrete finisher—a specification sheet on the Flex-Plane dc gas-electric concrete finisher. Stresses such features as independent screed drive motor, independent traction motors, and a frame adjustable from 12 to 26 feet. Photographs.

Write to the Flexible Road Joint Machine Co., Dept. C&E, 1750 Thomas Road, Warren, Ohio, or use the Request Card at page 18. Circle No. 81.

Road-building equipment—a folder on Seaman-Gunnison Tri-Pactors, Duo-Pactors, Duo-Scrapers, Duo-Graders, and the Duo-Pulverizer-Compactor designed for use with Minneapolis-Moline tractors. Emphasizes how the Duo-Pactor, according to the manufacturer, delivers higher densities with fewer rolling passes and less equipment investment.

Write to the Seaman-Gunnison Corp., Dept. C&E, 2763 S. 27th St., Milwaukee 15, Wis., or use the Request Card at page 18. Circle No. 51.

Tilt-bed trailers—literature on Rogers Bros. tilt-bed trailers. Covers models ranging in capacity from 6 to 25 tons, and includes single and double-axle trailer designs, many with special innovations and construction features. Illustrated with photographs, drawings. Specifications furnished. Form No. TB-60.

Write to the Rogers Bros. Corp., Dept. C&E, 108 Orchard St., Albion, Pa., or use the Request Card at page 18. Circle No. 47.

Concrete grinders—a fact sheet illustrating and describing the Edco Model 2GC gasoline-engine-powered, twin-disk concrete grinder. Brief specifications; close-up of major construction features.

Write to the Equipment Development Co., Dept. C&E, 2700 Garfield Ave., Silver Spring, Md., or use the Request Card at page 18. Circle No. 66.

Rock tongs—literature describing and illustrating McCaffrey tongs for the handling of large rock. Points out how the double center-pin action enables the two arms of the tongs to adjust themselves independently around odd shapes.

Write to M. P. McCaffrey, Inc., Dept. C&E, 2121 E. 25th St., Los Angeles 58, Calif., or use the Request Card at page 18. Circle No. 69.

Testing equipment—a bulletin on Soiltest laboratory equipment. Among the items illustrated and described are a mechanical laboratory mixer, a balanced mechanical shaker, and mechanical mortar and pestle sets. Bulletin N100-60.

Write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 52.

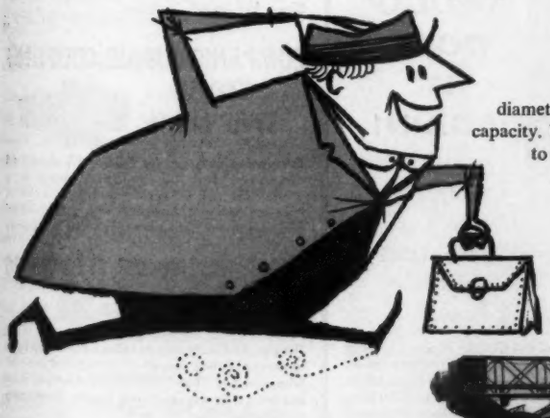
Threaded steel rods—literature describing threaded steel rods for making concrete forms and for scaffold and shoring jacks. All types; all materials and lengths; diameters to 5 inches.

Write to the General Screw & Bolt Co., division of General Hardware Mfg. Co., Dept. C&E, 332 N. Western Ave., Chicago 12, Ill., or use the Request Card at page 18. Circle No. 100.

Materials hoist—a brochure describing the benefits of the Campbell Lad-E-Vator hoist, designed to carry up to 1,000 pounds to a height of 80 feet. Action photographs stress the versatility of this easily erected and towed unit.

Write to the Campbell Equipment Co., Dept. C&E, P. O. Box 306, Des Plaines, Ill., or use the Request Card at page 18. Circle No. 55.

JOSLYN SELLS IT...



Have you ever had the pleasure of telling a TRUE story that sounds like a gross exaggeration? This is the Williams Digger story!

Some earth boring machines are designed for large diameter drilling, others are built especially for greater depth capacity. Underreaming is a problem that one digger is supposed to solve, while another aims for high production drilling.

But to describe a Williams digger, we have to make all of the claims mentioned above and then add a few Williams exclusives to tell the whole truth.

JOSLYN sells the first one to a contractor, and after that . . . The Williams Digger sells itself!

HUGH WILLIAMS

Manufactured by
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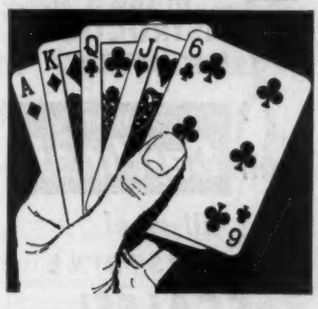
P. O. Box 7815 • Dallas, Texas

Write Exclusive Distributor
JOSLYN MFG. & SUPPLY CO.
2101 Corinth St. • Dallas, Texas
for DESCRIPTIVE LITERATURE

For more facts, use Request Card at page 18 and circle No. 337

POKER? Play to win!



How would you play this hand?

Don't let the high cards tempt you. This is no better than drawing to an inside straight (odds about 12 to 1 against filling). Fold...fast...and patiently wait for a good hand.

Here's a sure winner from FORD:

Ford pays half your fuel bills for a full six months (or 400 tractor hours) on the purchase of any new Ford or Fordson diesel tractor.

This offer, made possible by the amazing fuel-saving performance of these low-priced diesel tractors, expires March 31, 1961.

No "hidden" price increase... no tricks of any kind. See your Ford Tractor Dealer for all the money-saving details!

Tractor and Implement Division, Ford Motor Company, Birmingham, Michigan

Ford
TRACTORS
EQUIPMENT

For more facts, circle No. 338

Contractor gives attention to details that

Cut costs on job cleanup

Efficient cleanup by the contractor on a section of New York Interstate saved operating costs and made things easier for subs. This Austin-Western grader is being used to shape ramp shoulders.

Contractors and Engineers staff article

Good planning plus ample manpower and equipment was the job cleanup formula used by Mt. Vernon Contracting Corp., Mt. Vernon, N. Y., on a 3½-mile section of the Cross Westchester Expressway north of New York City. By putting a "blitz" on this often neglected phase of construction, the contractor was able to cut into job costs.

Mt. Vernon got the superhighway contract on a low bid of $10.6 million (the engineer estimate was $13.6 million) that covered grading and paving of twin concrete roadways 36 feet in width. The contract also included nine bridges and a 1,500-foot steel and concrete viaduct.

On completion of the major contract items, Mt. Vernon resisted the natural tendency of some contractors to strip the job of men and equipment and started its cleanup operations with key crews.

The contractor's project engineer, working with the resident engineer, prepared punch lists and work schedules covering the various items. After consulting these sheets, the superintendent assigned crews for each of the jobs to be handled by Mt. Vernon. The superintendent cruised the job constantly; as each cleanup item was completed, men and equipment were moved.

Helps subcontractors

The cleanup system aided subcontractors working on guardrail, right-of-way fencing, and seeding. O. W. Hubbel & Sons, New Hartford, N. Y., was the subcontractor handling installation of 25,000 linear feet of unpainted aluminum guardrail called for by the spex. Supplied by Alcoa, the 12-foot 6-inch × 12¼-inch panels were bolted to 8 × 6-inch untreated western red cedar posts, 5 feet 4 inches long, which were set on 12-foot 6-inch centers. Using a Sterling auger mounted on a Ford truck chassis, Hubbel dug 200 post holes 36 inches in depth on a daily average.

Some 16,000 linear feet of woven-wire fencing also had to be installed along the right-of-way. This was furnished by The Cyclone Fence Co., which also subcontracted the work.

The subcontractor for the seeding and mulching of 66 acres of slopes, center mall, and other areas was Highway Seeding & Sodding Co. of New York City. Plans called for sowing 60 pounds of pure live seed per acre, 30 pounds of red fescue, 20 pounds of Canada blue grass, 5 pounds of red top, and 5 pounds of wild white clover. The mixture was applied under pressure in a water slurry. A mulch cover of hay, at 2 tons per acre, was blown on with a Reinco mulcher powered by a Wisconsin engine. A tack coat of RC cutback was applied to seal the mulch.

In its cleanup operations, Mt. Vernon made a special effort to complete major slope work before guardrail were erected so that access to the areas was easy and damage to rail ing and equipment was reduced.

Three Gradalls were used to trim short slopes, clean ditches, and dress

Cut Maintenance Costs in the CONSTRUCTION INDUSTRY with MURPHY Cardinal all-steel INDUSTRIAL SCALES!

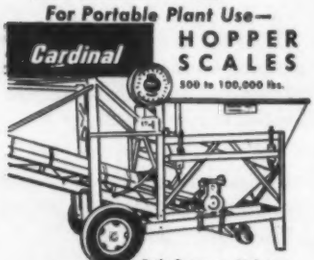
PORTABLE—HEAVY-DUTY MOTOR TRUCK SCALES

The high tensile strength of steel, and modern design simplicity—built from the ground up give lower installation costs and maintenance free operation.

★ TANDEM CONNECTED UNITS
★ SPLIT FRAME UNITS
★ SINGLE UNITS
★ CAPACITIES TO 100 TONS

Two type of decks offered—Checkered Steel Plate Runway or Timber decks. Easily transported—just remove a few bolts.

For Portable Plant Use—
Cardinal HOPPER SCALES
500 to 100,000 lbs.



Both Beam or Dial type available with manual, semi-automatic or fully automatic operation. Adaptable for any hopper.

★ Most delivery 10 days ★ NATIONWIDE SERVICE
★ Scales Custom made to your specifications

WRITE FOR INFORMATION AND PRICES TO

Cardinal SCALE MFG. CO.
Dept. 104 P.O. Box 151 Webb City, Mo. also Sacramento, California

For more facts, circle No. 339

TRUCO® DOES IT AGAIN!

Makes history by sawing 11½" thick, 5000 lb. test concrete reinforced with 2 layers of ½" rods on 8" centers. Big slab sawed out in 3½ hrs.

PROJECT: Wind tunnel at government research base. **CONTRACTOR:** Nash Drilling Co., Ltd., Montreal, P.Q. **EQUIPMENT:** Truco 18 H.P. Economy Concrete Saw; Truco Tru-Bond Diamond Blade 26" dia. ½" thick. **JOB:** Cut an inspection opening 10'0" x 5'0" in 5000 lb. test concrete reinforced with 2 layers of reinforcing rods ½" dia., placed on 8" centers. Slab was marked off in two 5'x5' sections, and 3" holes drilled in the four corners of each section to receive fastenings for cables to support slabs. Four cuts released the first slab for removal. There more cuts released the second slab. The 26" dia. Truco Diamond Saw made a 10½" cut and the remaining concrete on the wavy underside (about 1") easily broke away when the slab was lifted. Actual cutting time was only 3½ hours and the entire job was easily done in one day. Savings are so great Truco Diamond Drilling and Sawing Equipment may pay for itself on a single job or in a single day. Send for new Truco catalog.

MASONRY DRILLING DIVISION
WHEEL TRUEING TOOL COMPANY
1878-3200 W. Davison, Detroit 38, Mich. • 575 Langlois, Windsor, Ont.

For more facts, use Request Card at page 18 and circle No. 340

"GJ-BOSS"

GROUND-JOINT FEMALE COUPLING, STYLE X-34

SO Reliable FOR PILE DRIVING

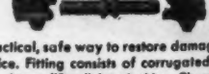
...AND ANY STEAM, AIR, WATER AND HYDRAULIC SERVICES...
HIGH OR LOW PRESSURE
Washerless

Unequalled for safety, efficiency and long service life. Ground-joint union between stem and spud provides leak-proof, trouble-free seal . . . no lost or worn-out washers to replace. All parts malleable iron or steel, rustproofed. Furnished with superstrong "Boss" Offset and Interlocking Clamps. Sizes ¼" to 6", inclusive.

COMPANION MALE COUPLING "BOSS" STYLE MX-16

Companion coupling for "GJ-Boss", described above, and "Boss" Washer Type Couplings Style W-16. Each size fits same size hose . . . oversize hose not required. Furnished with "Boss" Offset and Interlocking Clamp. Sizes ¼" to 6", inclusive.

"BOSS" HOSE MENDER, STYLE BM-16



The practical, safe way to restore damaged hose to service. Fitting consists of corrugated mender tube and two "Boss" Interlocking Clamps. Tube has flanges to engage clamp fingers. Thoroughly rustproofed. Sizes ½" to 6"

Stocked by Manufacturers and Distributors of Industrial Rubber Products

DIXON Valve & Coupling Co.
GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA.
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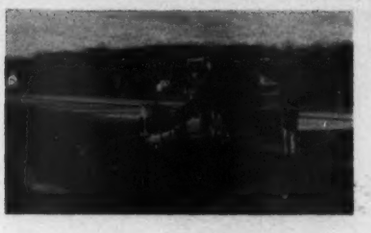
DIXON VALVE & COUPLING CO. LTD. TORONTO Associate Company

For more facts, circle No. 341

Stockpiled topsoil is loaded out by a Cat 977 Traxcavator to rear-dump Euclids. The material is hauled to areas where it is needed so that the slope-seeding subcontractor can go right to work.



A Gradall trims a shoulder and slope. These rigs worked on short slopes, ditches, and the center mall.

This Reinco mulcher applies hay mulch on a seeded area. This work was done by Highway Seeding & Sodding Co., of New York City. Mulch was sealed by a tack coat of RC cutback asphalt.

A D8 dozer spreads topsoil on a ramp slope. Trucks were unloaded by crane in these areas, where it was impossible to dump on shoulders.

up the center mall. Surplus material removed by these rigs was cast in windrows on the concrete pavement, then loaded by a Michigan 175 to rear-dump Euclids for the haul to a spoil area. Long slopes were dressed up by a Northwest 80-D dragline swinging a wire-rope blasting mat. Hand labor was used to trim the tops of rock cuts and areas too steep or impractical for equipment operation.

Topsoil from on-the-job stockpiles was handled with a Cat 977 and a fleet of Euclid rear-dumps. Two Lima truck cranes, using clamshell buckets, placed the material on slopes and shoulders, where it was spread with a Cat D8 dozer.

At ramp areas and around bridges, where turning restrictions made it impossible to dump topsoil on the shoulders, truck cranes and Euclids handled the job. Mt. Vernon figured on a saving in pavement cleaning costs with this method, since job traffic would not be able to track the material on the pavement. With the possibility of wet and freezing weather, this cleanup would have added considerably to the cost.

The major equipment items on the 3½-mile cleanup operation were: 3 graders; 4 dozers; 3 end-loaders; 3 truck cranes; 2 draglines; 1 backhoe; 3 Gradalls; 14 dump trucks; and 2 air compressors.

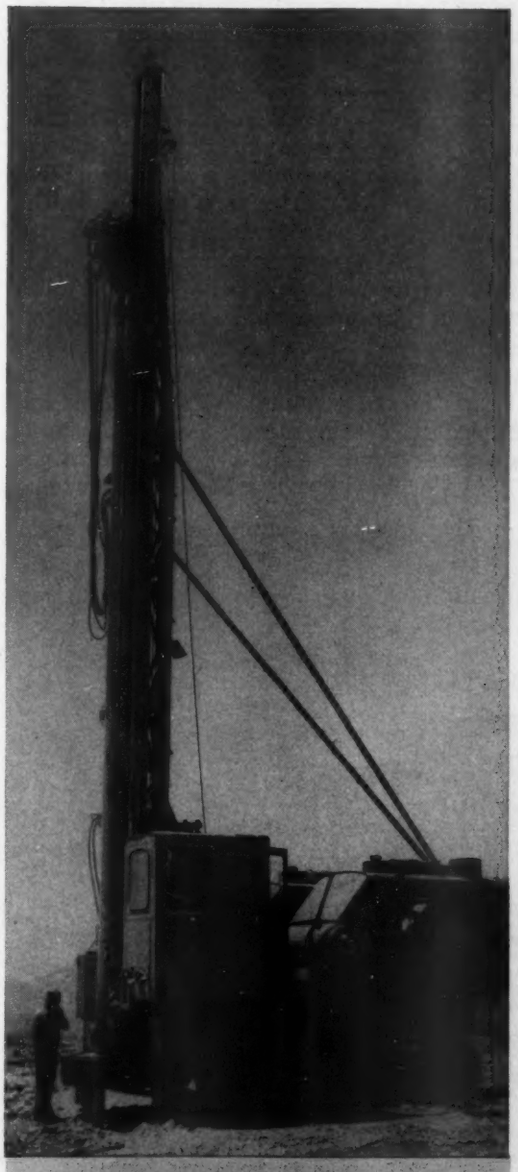
Seal deck joints

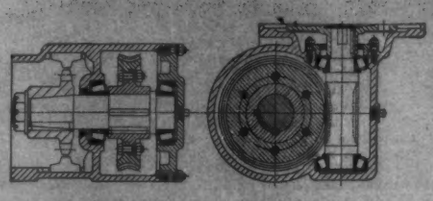
A three-man Mt. Vernon crew, using Bondtite two-component joint sealer, filled the concrete deck joints on the bridges and viaduct. Preheating is not required for the dense, rubberlike material. Packaged in five-gallon cans, it is made free-flowing by the addition of a pint of Bondtite liquefier. The mixture is prepared in the field by using a beater powered with a 1½-kva generator.

Paper work

While the cleanup work was moving along, the contractor's field office and engineering force were busy completing the paper work necessary for final payment—documenting material purchases, certifying payrolls, etc. The engineering department was getting releases from various public works agencies and public utilities; obtaining written acceptances for re-

(*Continued on next page*)





How Timken bearings are used on the worm drive in Ingersoll-Rand's QM-3-DHD-400 "Quarrymaster" —to take heaviest loads, cut maintenance.

How Ingersoll-Rand assures accuracy of "Quarrymaster's" drill feed under 900-blow-per-minute drilling

STRIKING 900 blows per minute and drilling through all kinds of hard broken rock formations puts terrific loads on the air motor that feeds the "Quarrymaster" drill. Yet the motor assures accurate, positive control of drill feed; fights a tight steel when drilling broken and seamy ground. One big reason the motor works so dependably is that the worm gear is mounted on Timken® tapered roller bearings. Ingersoll-Rand selected Timken bearings because . . .

1. *They take all loads.* The tapered design of Timken bearings enables them to take *any* combination of radial and thrust loads. And full line contact between rollers and races gives Timken bearings *extra* load-carrying capacity—to take heavy shock loads.

2. *They reduce maintenance, last longer.* Because they hold shafts concentric with their housings, Timken bearings make closures more effective in keeping dirt and moisture out, lubricant in, maintenance down. Bearings and parts last longer.

And Timken bearing-equipped machines give you the extra advantages of Timken Company leadership in tapered roller bearing design plus service from graduate engineer salesmen. Backing this leadership are the most modern testing, research and development facilities in the bearing industry.

When you buy Timken bearings you get...1) Quality *you can take for granted. 2) Service you can't get anywhere else. 3) The best-known name in bearings. 4) The pace setter in lower bearing costs.* The Timken Roller Bearing Company, Canton 6, Ohio. Cable: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steel and Removable Rock Bits.* Canadian Division: Canadian Timken, St. Thomas, Ontario.

Industry rolls on

TIMKEN®

tapered roller bearings

For more facts, use Request Card at page 18 and circle No. 342

Piles of debris are cleaned up by a Michigan 175 loader, which fills a Euclid rear-dump.

Working beyond guardrail posts, a Lorain with clamshell bucket places riprap on a stream bank.

Bridge deck joints are sealed with Bondtite. An Ingersoll-Rand compressor supplies air to clean joints.

MORE HAUL!
NO STALL!
MORE THRIFT!
NO SHIFT!
MORE GUTS!
NO BUTS! (...IFS OR ANDS!)

First on the job, last off — Moline's MoTrac puts out more work per dollar invested than any other crawler. Here are some reasons. The MoTrac's Torque Converter drive with toe-operated Hydro-Shuttle lets you change speed or direction *instantly*. From full ahead crowding to full reverse without shifting. And your hands are free at all times to steer and load. Result? Faster cycles, more yardage per hour. No stalling under heaviest loads either; no wasted time. Reason? The famous Moline engine, built for high torque at low rpm. Plus the heavy cast and solidly bolted power train—an unshakeable column of strength from end to end. And here are more features: 1000 hour service rollers, simplified controls, 1¼ yard bucket. For maneuverability, versatility, and solid build you can't beat the MoTrac at *any* price. You'll tackle anything and everything with your MoTrac. Test drive it at your Moline dealers today.

MoTRAC® BY MINNEAPOLIS MOLINE

For more facts, use Request Card at page 18 and circle No. 343

(*Continued from preceding page*)

located water or sewer lines and rebuilt streets, curbs, and sidewalks; and satisfying damage claims—real or imagined—made by property owners along the right-of-way.

The highway, slated for completion in August of this year, was opened to traffic eight months ahead of schedule, in December, 1960.

Representing the state of New York was Herman I. Dorfman, consulting engineer, assisted by J. H. Hambrick. D. R. Smith was resident engineer.

For Mt. Vernon, P. P. Fox was the project manager, Fiore Di Marzo was superintendent, Dan Rago was project engineer, and Joseph Castriota was office manager. THE END

New coil-welding line installed by U. S. Steel

■ U. S. Steel Corp., New York, N. Y., has begun operation of a new high-speed coil-welding line at its Youngstown, Ohio, district works. The line will permit production of steel coils up to 30,000 pounds and will weld coils ranging from 5 to 38 inches in width and from 3/64 to 5/6 inch in gage thickness.

An automatic oiling device was installed to satisfy customer requirements for oiled strip products.

Airco appointments

■ L. W. Kunkler has been named district manager of the Buffalo office of Air Reduction Sales Co., New York, N. Y. He succeeds R. H. Merriman, who has been transferred to the company's Philadelphia office.

Kunkler was formerly assistant manager, engineering services, for Airco's Cleveland district.

J. H. Berryman is the new manager of Airco's special-products department in Union, N. J. He will be responsible for the development of products and processes from the research stage to commercial and industrial applications. He was formerly sales manager of the department.

Robert A. Stone, now sales manager of the department, previously served in Airco's process-development section.

Apeco elects officers

■ The American Photocopy Equipment Co., Evanston, Ill., has elected Clayton L. Rautbord senior vice president of the company. Formerly a vice president of the firm, Rautbord will continue his responsibilities in charge of research engineering and production.

Arnold Perry was elected vice president of sales. He was formerly general sales manager.

Burton D. Eisner, previously chief engineer, was elected assistant vice president. He will direct mechanical engineering and quality control.

Meyer L. Sugarman was elected assistant vice president. He will continue as director of new-product research.

Caterpillar subsidiary buys Grenoble plant

■ Caterpillar France S. A., a new subsidiary of Caterpillar Tractor Co., Peoria, Ill., has purchased a 150,000-square-foot plant in Grenoble, France, to house its manufacturing facilities.

Production of Caterpillar D4 tractors is scheduled to begin this month. Later, 955 Traxcavators will also be produced.

The sale of the subsidiary's products outside France will be handled by Caterpillar Overseas S. A., of Geneva, Switzerland.

Atlas Powder expands at Joplin plant site

■ A new 1-story office building is under construction at the Joplin, Mo., plant site of Atlas Powder Co., Wilmington, Del. The building will consolidate the present plant offices and the Joplin district sales office of the company's Explosives Division. Space will also be provided for marketing personnel of Solar Nitrogen Chemicals, Inc., which is jointly owned by Atlas Powder and The Standard Oil Co. (Ohio). Solar is erecting a new anhydrous ammonia-urea plant in the area.

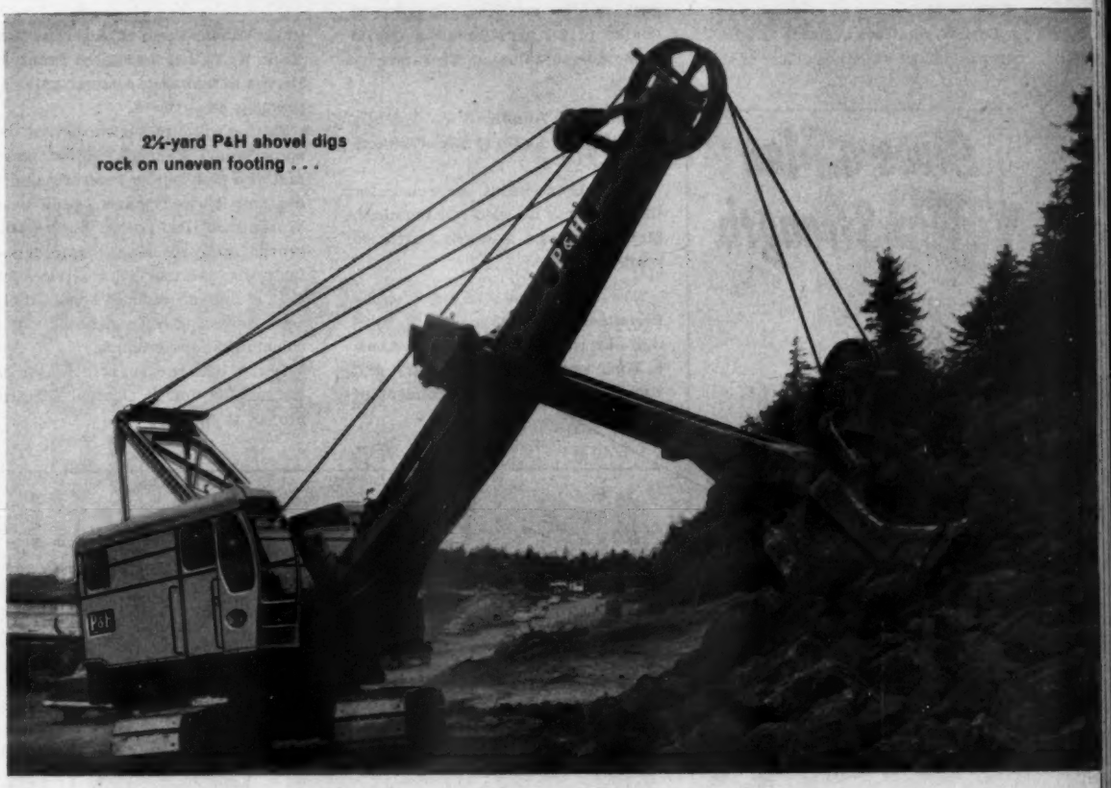
Designed by Atlas' central engineering department, the new office building will contain some 10,000 square feet of space with parking facilities and a cafeteria. The building is scheduled to be completed in May.

Union Wire Rope merges with Armco

■ Union Wire Rope Corp., Kansas City, Mo., a wholly owned subsidiary of Armco Steel Corp., Middletown, Ohio, since 1958, has been merged with the parent company in a move designed to simplify and strengthen Armco's corporate structure. Union Wire Rope will continue to operate as a separate unit, and all sales activities will continue with the same policies and personnel as in the past.

James H. Hatch, who was president of the subsidiary, will continue as general manager with the same responsibilities. George P. Lacy will continue to direct Union Wire Rope's sales organization.

TRANSPORTING A 65-FOOT SECTION of fabricated steel from St. Paul to a hotel site in downtown Minneapolis, Minn., are two 38-foot heavy-duty Dorsey platform trailers. The contractor on the job, E. L. Murphy Trucking Co., divided the 200,000-pound structure into four such sections, and moved them all in the same manner to solve a tough hauling problem.



OUR MAGNETORQUE-EQUIPPED P&H

"takes a 3½-ton bite every 15 seconds"

...FLOYD L. SOMERS CO., Medford, Oregon

Harlan E. Weaver, Superintendent, reports . . . *"Moving rock like this is hard work, and our 2½-yard* P&H *crawler shovel has been doing it for the past 4 years. This machine has Magnetorque swing, which is the big reason we get a complete work cycle in 15 seconds . . . 40% faster than the shovel we used to use. This really adds up to top yardage at the end of the day."*

Smoother, faster swings speed up operation. Floyd L. Somers has the contract to excavate, haul and supply the fill for the new bridge over the Siuslaw River near Florence, Oregon. Of prime importance to him is the speed with which he can excavate rock and load trucks for the haul to the dumping site. That's why Magnetorque is so important on his 2½-yard P&H shovel. It gives him faster, smoother swings with an average work cycle time of 15 seconds.

P&H shovel works on uneven ground. On this particular job, the P&H is forced to work on a 20-30% grade and swing while the tracks are on uneven footing, but even after operating under these conditions all day, there is no overheating of the Magnetorque swingers.

A. L. Mattson, Superintendent, says . . . *"This P&H shovel is one of the most modern and easiest to operate machines I have seen. Magnetorque, hydraulic controls and air/hydraulic brakes give our operators perfect control at all times—enable them to get maximum production with minimum effort on their part."*

For complete information on this job, write for Case History 129 or call your local P&H dealer.

HARNISCHFEGER P&H
Milwaukee 46, Wisconsin

Manufacturer Memos

G. Robert Compton, Jr., new executive vice president, McKiernan-Terry Corp.

A broad reorganization of the **McKiernan-Terry Corp.**, manufacturing engineers with plants in Dover and Harrison, N. J., has been announced by **Arthur W. Buttenheim**, chairman of the board.

Carl W. Shattuck remains as president and chief executive officer of the corporation. **G. Robert Compton, Jr.**, formerly a vice president in charge of the pile-hammer division, fills the new post of executive vice president and chief administrative officer. **John R. Busko**, formerly assistant treasurer, is the new controller.

New vice presidents are: **Howard L. Mattes**, in charge of all engineering; **Vincent F. Severo**, contracts administration; **Byron Nierenberg**, marketing; **Frank H. Keckeissen**, purchasing; and **Thomas F. Harry**, personnel.

Frank W. Hamilton, who retains his post as vice president, is now in charge of all manufacturing. **David K. Bouton** continues as treasurer.

William L. Kauffman was recently elected controller of **The Flintkote Co.**, New York, N. Y.

Formerly assistant controller for the company, he succeeds **Dennis J. McNamara**, who is retiring after 40 years of service.

New officers have been appointed by **Permiteco, Inc.**, Dayton, Ohio. **R. Wain Bowman** is president-treasurer, **Louis S. King** vice president-secretary, and **Russell J. Pellman** vice president of the company.

Robert A. Olen, vice president of Gar Wood Industries, Inc.

Robert A. Olen has been appointed vice president of **Gar Wood Industries, Inc.**, Wayne, Mich.

Olen, who has had more than 35 years' experience in the truck and construction-equipment industry, was most recently president of FWD Corp., Clintonville, Wis.

The **Radio Corp. of America**, New York, N. Y., has appointed **Frank P. Barnes** as manager, communications-products department.

Barnes will direct operations at the corporation's Canonsburg, Pa., plant and at a new facility presently under construction at Meadow Lands, near Washington, Pa. Both facilities will provide complete engineering, manufacturing, and marketing services for RCA's line of mobile 2-way radio equipment and a variety of other communications products.

Barnes was previously manager of engineering for a General Electric project in Schenectady.

Robert W. Bird has been appointed assistant to **Samuel W. White, Jr.**, president of the **Oliver Corp.**, Chicago, Ill. He has been assistant director of industrial relations for the company since 1950.

H. E. Kruse is now director of product training. He will work particularly with distributors on construction-equipment products, placing special emphasis on the firm's crawler tractors. He has served with the company in various capacities since 1936.

Lloyd Tuttle has been named manager of the Des Moines division of the company's Omaha branch. He will be in charge of all Oliver farm and construction-equipment sales in 12 counties in Iowa. He succeeds **John Kruskopf**, who is now in Minneapolis.

Gives a Man Giant Strength

CM PULLER

- **SMALL** Lever is only 20½" long.
- **POWERFUL** 83 lbs. on lever* produces 3,000 lbs. at hooks. *1½ ton model.
- **VERSATILE** "CM-Alloy" flexible welded chain. Lifts or pulls at any angle.
- **PORTABLE** Made of aluminum alloy. ¾ ton model weighs only 14 lbs. Capacities ¾ to 6 tons.

A NATURAL FOR CONSTRUCTION WORK! The "CM" Puller will do a "thousand-and-one" jobs for you. It will do them faster, safer and far easier. The "puller" is compact... stores conveniently in a tool box. Lifetime lubricated. Every contractor should have one.

CM HOISTS

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For more facts, circle No. 345

Air-cooled power pays off!

VIBRATING COMPACTOR enables operator to match roller and soil vibrations for full compaction efficiency. Made by Tampo Mfg. Co., San Antonio, Tex., the 3½-ton unit rolls a strip 40 in. wide. Powered by a VG4D Wisconsin.

37-hp WISCONSIN ENGINE

packs 80-ton punch—cuts upkeep!

Are you in a tizzy about engine power? Then let a vibratory compactor help you pick the one that's best for your money — and your job.

Here's why: The above 37-hp VG4D delivers 80 tons of compacting power under terrific shock and impact. Yet it keeps the compactor rolling day-in, day-out.

Like all Wisconsins, the VG4D is precision-built for hard work and long life — to lug through shock loads without stalling. And Stellite exhaust valves and inserts plus positive rotators *make valves last up to five times longer!*

Air-cooling helps, too. It eliminates dry-ups and freeze-ups. There are no radiators, water pumps, fan belts, and other water-cooling parts to buy, service, wear out, and replace — a blessing on construction jobs.

Get the most work out of your equipment — power it with Wisconsin Engines, 3 to 56 hp. Electric starting available for all models. Get Bulletin S-254. Write Dept. C-21.

WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

For more facts, use Request Card at page 18 and circle No. 346

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Save you money 4 ways

PENGO HEAVY-DUTY Twin Helix Augers—14" through 96" hole diam.

1 **BORE FASTER**... put real "teeth" in earth drilling, save wear and tear on your diggers.

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PENGO BORING HEADS for welding to your present auger flights.

PENGO FLIGHT AUGERS and ANCHOR AUGERS—6" through 36" diam.

IF IT'S AUGERS YOU WANT, WE HAVE 'EM—JUST ASK US!

PENGO Augers and Boring Heads are available for all popular types of diggers, from light-duty post hole and farm tractor machines to the largest heavy-duty earth drills. Write today for free catalog; please address Dept. 20.

13-B

PETERSEN ENGINEERING CO., INC.
Santa Clara, California

For more facts, circle No. 347

Robert A. Trumpis is vice president in charge of manufacturing for **Minneapolis-Moline Co.**, Hopkins, Minn. He will be responsible for all manufacturing operations of the parent company at Hopkins and Minneapolis, its divisions and subsidiaries.

Robert Rittmaster has been elected chairman of the board of Minneapolis-Moline. Vice president of Rittmaster & Co., Inc., business and investment analysts, he has been a director of Moline since 1957.

Paul R. Hartig, vice president and general manager, Yale Materials Handling Division, Yale & Towne Mfg. Co.

Paul R. Hartig is the new vice president and general manager of the Yale Materials Handling Division of **The Yale & Towne Mfg. Co.**, New York, N. Y. He will make his headquarters at the Philadelphia plant.

For the past six years he has been general manager of General Electric Co.'s Insulator Department.

P. E. Tobin has been named vice president, wholesale operations of the White Truck Division, by **The White Motor Co.**, Cleveland, Ohio. He will be responsible for expanding wholesale sales and service operations.

Tobin, formerly vice president of sales for White, is returning to the company after two years' absence.

Maurice B. Wood is the new northeast regional manager of **Symons Clamp & Mfg. Co.**, Chicago, Ill. He was previously manager of the firm's Cleveland office.

Wood's successor in Cleveland is **Robert L. Bruns.**

For more facts, use Request Card at page 18 and circle No. 349

Harnischfeger Corp., Milwaukee, Wis., has made several organizational changes.

William S. Burdick, previously vice president of engineering, has been appointed corporate consulting engineer. He will continue to serve as a director of the corporation.

Robert D. Teece, formerly assistant to the president, succeeds Burdick as vice president of engineering.

Bernard Pratte, who has been general manager of the Pacific division since 1955, is now assistant to Harnischfeger's president.

The new vice president of finance and treasurer is **William L. Carter.** He has been treasurer of the firm since 1959.

DeForest J. Coyle will become plant manager of the Los Angeles manufacturing operations.

Three appointments were made in the controller's office: **James W. Gaudet** is assistant controller, financial accounting; **Gordon O. Rieboldt**, assistant controller, product accounting; and **Darwin H. Warnke**, manager of systems and procedures, and data processing.

Vernon L. Perkins is now sales representative for P&H construction and mining equipment in Oregon and northern California.

Joseph C. Hamilton, vice president and general sales manager of the Construction Machinery Co.

Joseph C. Hamilton has been named vice president and general sales manager of the **Construction Machinery Co.**, Waterloo, Iowa. He will be responsible for the sales and service of CMC mixers, pumps, and hoists for the construction field.

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ELIMINATES EXPENSIVE ENGINE REPAIRS

Keeps rain, snow, dust and insects out of vertical stack engines.

Easily installed . . . works automatically. Counterbalanced cap is closed until engine is started. Stack pressure opens cap . . . permits exhaust to escape. Made of heavy gauge malleable steel, with stainless steel hinge. Sizes: 1" to 6" stack O.D.

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Unique square umbrella type cap provides greater rain protection. Gasketed double seam construction resists rough handling . . . lasts longer, prevents leakage. Easy to refill . . . no threads to foul or stick. Ring chain for carrying. Capacity: 88 oz., Burning time: 24-48 hours.

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AD NO 44-28

TROJAN® TRACTOR SHOVELS YALE & TOWNE

THE YALE & TOWNE MANUFACTURING COMPANY
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SEVEN MODELS TO CHOOSE FROM, 7,000 LBS. TO 24,000 LBS. CAPACITY

Prestressed lift slabs join slip-formed towers

Construction of this 13-story San Francisco apartment building combines the lift-slab and slip-form methods; during the lifting operations, bracing was not needed since the three towers absorbed the horizontal loads. The lightweight-concrete post-tensioned slabs were cast with electrical conduits and hot-water pipes in place in 3½ hours. A Safway tubular-steel service tower serves upper floors during construction.

Contractors and Engineers staff article

A recently completed 13-story San Francisco apartment building boasts a combination of construction techniques that have probably never been duplicated—at least on a building this high. The combination includes slip-formed towers for stair wells and elevator shaft, plus post-tensioned lift-slab floors and roof of lightweight concrete. The foundations are bell-bottom drilled caissons.

Known as the 1800 Pacific Building, the luxury apartment structure was designed in the offices of the late H. C. Baumann, San Francisco architect, with August E. Waegemann serving as consulting engineer. George P. Belcher, owner of the building, was the general contractor.

The post-tensioning and lifting of the slabs were done by the Vagtborg Lift Slab Corp. Prescon tendons were used for stressing. The B. M. Heede Co. supplied the equipment for the slip forming.

The structure measures 105 x 81 feet and is approximately 125 feet high. It contains 72 apartments and 82 garages. One of the advantages of the lift-slab construction was the low over-all story height; this allowed for two more floors than some other types of construction within the city's height restriction.

Towers are slip-formed

Since the three towers—one elevator shaft and two stair wells—are designed to resist the seismic loading, shear walls were not required. These towers were constructed first. The 4-foot-deep slip forms were built of plywood, backed by timber wales and supported on steel jacking yokes.

The B. M. Heede Co. jacking equipment included the hydraulic jacks and jack rods, and the hydraulic pumps and master control units.

Unlike the usual continuous-placement slip-form operations, the casting of the towers was started and stopped daily. Splices in the vertical steel were staggered, and keyways were left in the construction joints to help tie in when work was resumed. There were no objectionable joints there.

The contractor did an exceptionally good job of plumbing the high towers. Two 25-pound plumb bobs were suspended from the slip form into barrels of oil for guides. While the lift slabs had been designed to accommodate as much as 3 inches out of plumb, the maximum on any tower was ½ inch.

A Pecco tower crane hoisted the transit-mix concrete to the slip forms in 1-yard buckets. The buckets were dumped into hoppers mounted on staging above the working platform of the slip form, and the concrete was fed into the forms through tremies.

Meanwhile, a subcontractor, the P & Z Co., Inc., drilled the 42 caissons to a depth of about 30 feet, where they encountered a cemented-clay formation. The caissons were belled out at the bottoms, filled with concrete, and fitted with anchor bolts to take the building's steel columns.

The general contractor cast the

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- Easily rigged on the job
- Conservatively rated for safety
- Simple in design, easily maintained.

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360° operation. 500 to 2500 lb. capacities. Optional type of power. Champion electric shown.

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Safe worm or spur gear design. Sizes for 400 to 40,000 lb. load. No. 110 shown.

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- As few as eighteen high strength bolts rigidly fasten all sections for simplest and easiest conveyor erection ever.
- Four high strength bolts fasten head assembly . . . 8 bolts join intermediate sections . . . and 6 bolts connect tail assembly.
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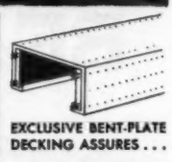
- Available in 18", 20", 24", 30" and 36" belt width conveyors. Delivered from stock. Competitively priced.



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easy installation of components plus protection for return run of belt.

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CLARKSDALE, MISSISSIPPI • BELLEVILLE, ONTARIO

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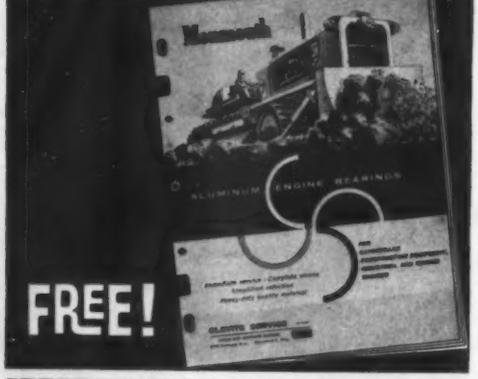

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NEW detachable ALL-weather CAB for Hough PAYLOADER

Enables your operator to work comfortably in all kinds of weather. Approved design for many Payloader models; fits perfectly, made of heavy gauge sheet steel and angle iron frame. Full vision SAFETY GLASS windows, mounted in rubber, right side and rear windows slide open for ventilation. Hinged door for easy access, may be removed for summer operation. Optional accessories include windshield wipers, heater-defroster, sun visor and rear view mirror. Campbell cabs are specifically designed for all Payloader models — see your Payloader distributor or write direct.

CAMPBELL detachable cab company
WAUCONDA, ILL.

For more facts, circle No. 355

The steel wedge that is slipped into place when a slab reaches its permanent place on the column is being pointed out. The wedge is welded in place to secure the connection.

stack of 13 slabs, each of which includes the electrical conduits and hot-water pipes to serve its floor. The 8-inch slabs were cast with Haydite lightweight concrete having a guaranteed strength of 3,500 psi at 14 days. The 200 cubic yards of concrete for each slab was placed in 3½ hours. The surfaces were finished with Stow power trowels and sprayed with Thompson Water Seal for cure. An additional coat of the Water Seal was applied before the next slab was cast to prevent bonding of the slabs.

The slabs are reinforced with prestressing tendons spaced at about 3-foot centers in both directions. The Prescon tendons contain from 7 to 14 high-tensile ¼-inch wires, and they are coated with rod lubricant and wrapped to prevent bond. The tendons are anchored to steel anchor plates at one end, and the stressing is done from the other end.

Spaces were boxed out of the slab forms at the tensioning ends of the tendons to accommodate the stressing jacks. These spaces were filled with concrete after the slabs were stressed and lifted into position.

Slabs lifted two at a time

The 20 steel columns of the building are 12-inch-square box sections built up of plates ranging in thickness from 2 inches down to ¼ inch. The columns were first set to bring the stack of slabs to the third-floor level. Then they were spliced in successive increments of approximately two floors at a time as the slabs were raised.

The hydraulic lift jacks mounted on top of the columns raised two of the 600,000-pound slabs at a time. As each pair of slabs was raised to its temporary position in the stack at the top of the columns, steel wedges were installed between the shear plates on the columns and the lifting collar of the slab. As each slab reached its permanent position on the columns, these steel wedges were installed and welded securely to the shear plates and the collars.

Since the towers were available to absorb all of the horizontal loads, it was not necessary to install any bracing during the erection of the lift slabs. This was a considerable saving, as well as a convenience.

As soon as the first few slabs were in place, the various subcontractors and crafts began installing partitions, plumbing, wiring, etc. This work was well along on the lower floors by the time the lifting operation was complete.

Personnel

Owner-contractor George P. Belcher was right on the job during the entire construction period. His superintendent on the project was Merrill Zemlicka. While the building was being designed in the offices of consulting engineer August E. Waegemann, one of the designers, Herbert Korner, became very much interested in the combination of operations. When it reached the construction stage, Korner went to work as project engineer for Belcher, supervising the operations throughout construction.

THE END

In 1946, Americans owned 34½ million motor vehicles. Today we own 71½ million. We own and drive 66 per cent of the world's passenger cars and 45 per cent of the world's trucks. Better highways will save your time and money—perhaps your life.

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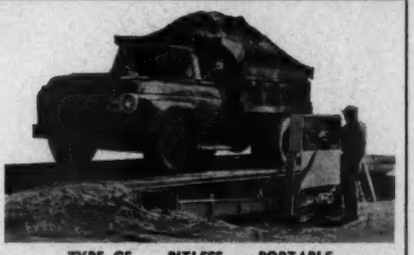
TRUCK SCALES
PIT AND PITLESS TYPES
Capacities: 15, 18, 20, 30, 40, 50, 60 and 70 tons.
For use at temporary and permanent locations, stockpiles, and by bituminous material contractors at the jobsite.



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25TH & HAYTHORNE TERRE HAUTE, IND.

For more facts, use Request Card at page 18 and circle No. 357

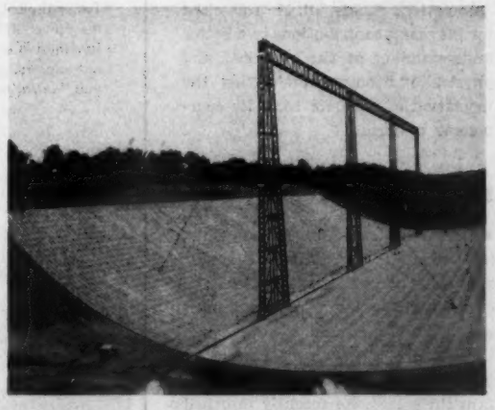
Science traps infinity in giant earthen bowl

...delicate earth contours protected from erosion by Careymat Liner

Soon, this gigantic radio telescope will sweep the outer limits of space, trapping and recording signals from remote constellations in its great parabolic trough. It could extend the range of our scientific "ears" two to three times that of our finest optical telescope.

Its 400′ x 600′ basin needed to be meticulously graded to a tolerance of plus or minus one inch. To prevent erosion, and preserve this delicate radial contour, the entire excavation was protected with a continuous surface of Careymat Liner, with sheets butt-jointed and secured with intermittent batten strips to alleviate back pressures resulting from possible underground water sources.

Careymat's economy (⅓ the cost of monolithic lining), physical flexibility and heavy-duty composition make it ideal for erosion control, as well as for water containment in ponds, storage reservoirs and canals. For a detailed description of the material and the methods of application, write Dept. CE-360 for Bull. 6341.



In a cornfield near Danville, Illinois, this giant radio telescope will penetrate the very limits of the universe. Financed by the Office of Naval Research, this project was designed and engineered jointly by the firm of Hanson, Collins & Rice, Inc. and the Astronomy Department of the University of Illinois. Careymat Liner installed by United Weatherproofing, Inc. Pittsburg, Kansas.

THE PHILIP CAREY MFG. COMPANY
Cincinnati 15, Ohio
Carey

For more facts, use Request Card at page 18 and circle No. 356

Flexible crushing setup

Crushing units, used in a variety of setups, turned out all the aggregate needed for subbase, base, and hot-mix on an interstate job near Great Falls, Mont. A Cedarapids twin-jaw primary, left, and Pioneer 46VE secondary are producing ¾-inch base rock and sending it to a surge bin for loading to bottom-dumps making the haul to the roadway. The twin-jaw and a 3-inch screen also produced the minus 4-inch subbase material.

Contractors and Engineers staff article

Aided by unusually good late weather, the contractor on a large grading and paving job on Montana Interstate I-15 northwest of Great Falls put on a burst of speed to complete the base and paving, just before winter put an end to the work season in that area. The flexibility of the contractor's several multistage crush-

Wheel Trueing booklet

■ The Wheel Trueing Tool Co., Detroit, Mich., has released "Souvenir of the Semi-Centennial," a booklet about the company containing the history of industrial diamonds over half a century.

Free copies may be obtained by writing on your business letterhead to H. E. Robison, president, Wheel Trueing Tool Co., 3200 W. Davison Ave., Detroit 38, Mich.

ACI elects officers, honorary member

■ The American Concrete Institute, Detroit, Mich., announced its 1961 slate of officers at its 57th annual convention last month.

Lewis H. Tuthill, concrete engineer with the division of design and construction, California State Department of Water Resources, is the new president of the institute. For the past two years he has served as vice president.

Roger H. Corbetta, head of the Corbetta Construction Corp. of New York and Chicago, was elected to a 2-year term as vice president. Arthur R. Anderson, G. E. Burnett, Chester P. Siess, and Anton Tedesko are new members of the ACI board of direction.

Elected to honorary membership was Treval C. Powers, research counselor in the research and development division of the Portland Cement Association, Skokie, Ill. He was cited for his many contributions to a better understanding of the chemical and physical phenomena underlying the formation of concrete from its component materials.

B. F. Goodrich names

■ B. F. Goodrich Co., Akron, Ohio, has appointed T. Wayne Brewster manager of construction for the company's new tire plant being built near Fort Wayne, Ind.

Brewster has been in charge of plant construction projects for the firm since 1951. He recently returned from Melbourne, Australia, where he supervised design and construction of a tire plant for B. F. Goodrich Australia Pty. Ltd.

For more facts, use Request Card at page 18 and circle No. 358 ▶

THE STEEPER THE GRADE...

the more "extra" loads a cycle-gaining Payhauler® gives yo

Of all three 27-ton off-road haulers, only the International 95 hauler gives you the weight-shedding, strength-multiplying ad tages of the rock-ribbed, corrugated body. Only the "95" is p powered by the 375-hp DT-817 turbocharged Diesel. And only "95" gives you an exclusive combination of power-control, sa and comfort features that turns haul-speed advantages into e haul-cycles! *Prove to yourself* what comparative grade charts and t tally sheets show! See your International Construction Equip Distributor for a Payhauler demonstration!

Positive Torqmatic braking gives the operator complete control of this fully-loaded "95"—builds confidence to use the highest practical haul speeds, even when hauling down the steepest grades. "One-hand" power-steering teams with finger-tip brake lever control to give course-holding, grade-matching downgrade hauling stability. Torqmatic braking, standard equipment on the power-shift "95," is a Payhauler *plus*—furnished in addition to the standard, internal-expanding wheel brakes—to help give you "*extra*" loads on tough hauls!

Grade charts prove: only the 95 Payhauler delive xtra"

Total grade and rolling resistance, 10%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	10.2	
Competitor X	8.0	27.5%
Competitor Y	8.0	27.5%

Total grade and rolling resistance, 11%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	10.1	
Competitor X	7.0	44.3%
Competitor Y	7.5	34.7%

Total grade and rolling resistance, 12%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	9.0	
Competitor X	6.3	42.9%
Competitor Y	7.0	28.6%

Total grade and rolling resistance,

Hauler	Hauling Speed (mph)
95 Payhauler	7.9
Competitor X	5.5
Competitor Y	6.0

...r base and surfacing

...ing setups was an important factor in meeting the tight schedule.

The $2,629,105 contract, one of the largest ever awarded by the Montana State Highway Commission, was taken by a joint venture of McLaughlin, Inc., Nilson-Smith Construction Co., S. Birch, Inc., and S. Birch & Sons Construction Co., all of Great Falls.

The grading, which called for 2.6 million cubic yards of earthwork, got under way in August, 1959, and was substantially completed by midsummer, 1960, in spite of the winter shutdown. The production and placing of the several base courses and the bituminous surfacing followed in rapid succession as sections of the grade were completed.

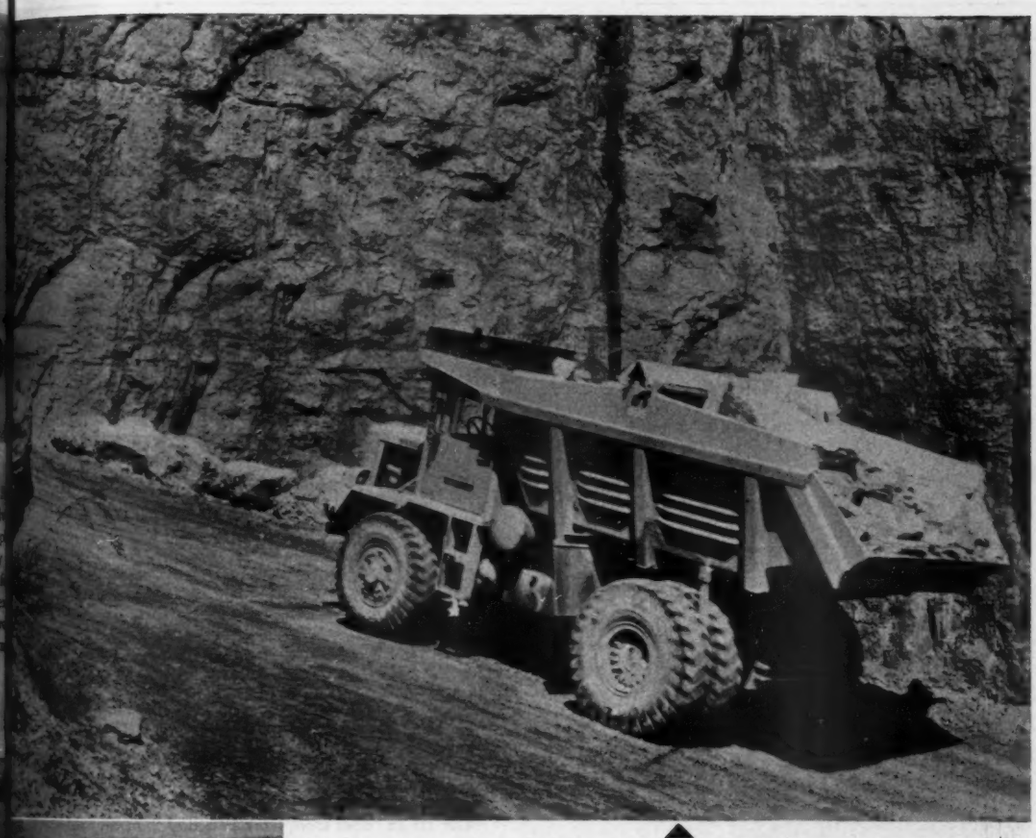
On August 19, 1960, the weekly progress report of the highway commission showed the project was 60 per cent completed. A spurt of work during the following two months resulted in the substantial completion of the base and surfacing so that the road could be opened to traffic in October. Cleanup, seal coating, and other finishing remain to be completed this year.

Producing and placing the 740,000 tons of three types of base material was a big part of the rush work. The plans called for 429,370 tons of minus 4-inch subbase, 261,035 tons of 1½-inch base rock, and 49,000 tons of ¾-inch rock, in addition to the aggregates for 91,000 tons of bituminous mixture.

These materials were all produced from two gravel pits by several Pioneer and Cedarapids crushing and screening units working alone or in various combinations.

A Cedarapids 40 × 60 twin-jaw crusher unit and a 3-inch screen

(Continued on next page)



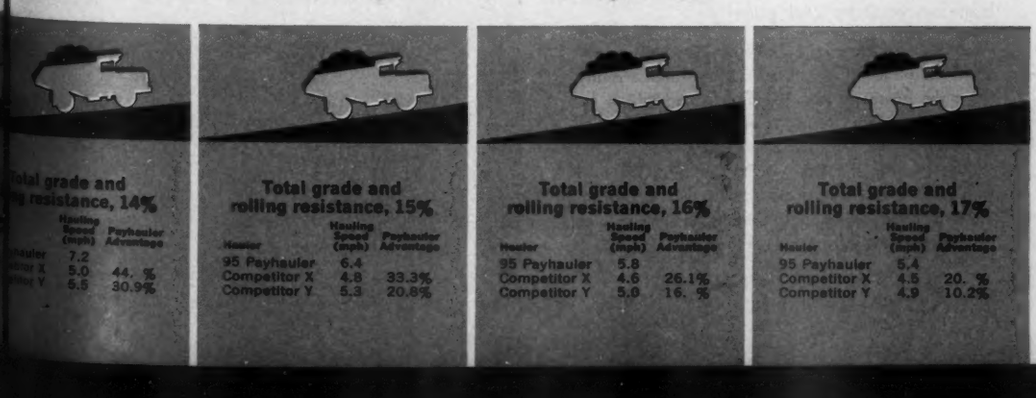
Two 65 Payhauler rigs speed full 19-ton loads of dolomite from quarry to crusher—up a maximum climb-out grade of 16%. Powered by the 250-hp naturally aspirated "817" Diesel—equipped with weight-shedding corrugated steel body—the "65" consistently hauls 30% faster than competitive rigs! Price the "65"—you pay less per hp, less per struck yard and per ton of capacity than for competitive rigs!

Three 95 Payhauler trucks replace five competitive haulers in a large Chicago-area quarry. Reasons: fully-loaded "95's" haul upgrade as much as 44% faster than the competitive make—give fast, "big-target" loading—dump in only 11 seconds with exclusive power-up and power-down hoist action. And the cycle-gaining "95's" with Torqmatic power-braking, power-steering and power-shifting deliver "extra" loads on steep hauls!

International Harvester Co.
180 North Michigan Ave.
Chicago 1, Illinois
A COMPLETE POWER PACKAGE

International® Construction Equipment

...elive...xtra" loads . . . over any 27-ton competitor



Total grade and rolling resistance, 14%

Hauler	Hauling Speed (mph)	Payhauler Advantage
...auler	7.2	
...r X	5.0	44. %
...r Y	5.5	30.9%

Total grade and rolling resistance, 15%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	6.4	
Competitor X	4.8	33.3%
Competitor Y	5.3	20.8%

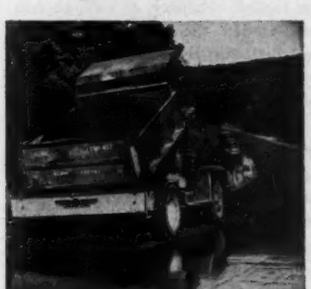
Total grade and rolling resistance, 16%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	5.8	
Competitor X	4.6	26.1%
Competitor Y	5.0	16. %

Total grade and rolling resistance, 17%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	5.4	
Competitor X	4.5	20. %
Competitor Y	4.9	10.2%

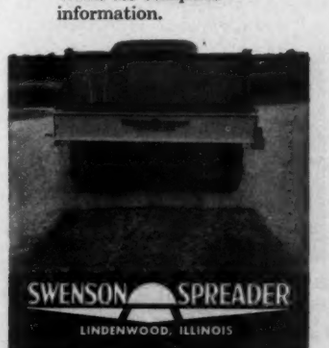
SWENSON the Summer-Winter Spreader...



U. S. Army Photograph

for resurfacing and ice control

Spread sand, gravel, salt, calcium chloride, cinders or any combination of these materials. Clutch-controlled from cab of truck. Any desired rate-of-flow. Steady or intermittent up to 30 M.P.H. Narrow strips or full traffic lanes. Forward or reverse. Models to fit any dump-truck box. Chain or hydraulic drive. Speed summer construction jobs, dust control, soil stabilization. Handle winter ice-control problems faster, safer, more efficiently. Write for complete information.



For more facts, circle No. 359

(*Continued from preceding page*)

turned out the minus 4-inch subbase as fast as two D9's and a 14A dozer could bring the raw material to the trap and the spread of "Euc" bottom-dumps could haul the finished material to the roadway. This subbase was laid over the grade in three lifts for a total compacted thickness of 12 inches. Each lift was compacted by the haul units passing over it and also by Ferguson 25-ton rubber-tire rollers.

A combination of units in the second pit produced the 1½-inch base rock. A D8 dozer and a Michigan 275A tractor shovel brought gravel from the pit to the feeder of a Pioneer primary jaw crusher. A 4 × 6-foot screen with 1-inch openings separated the oversize, which went to a Cedarapids Commander unit containing jaw and roll crushers and a vibratory screen. A closed-circuit arrangement retained the material in this unit until it had been reduced to minus 1½-inch size. An arrangement of shop-built conveyors delivered all of the finished material to a surge bin, and a loading conveyor placed it in the "Euc" bottom-dumps for delivery to the road.

The Euclids drove onto the platform of a 60-ton 60-foot Murphy truck scale set up under the end of the loading conveyor. As soon as they were loaded, the weight was quickly recorded, and the rigs were on their way without having to make another stop for weighing.

The windrows placed on the road by the bottom-dumps were bladed out to uniform 4-inch courses by a pair of Cat No. 14 motor graders. This material was watered on the road and manipulated by the motor graders to incorporate the optimum water content. The courses were then carefully bladed to grade and compacted by rolling with the Ferguson 25-ton rubber-tire rollers. There were four of these big Ferguson rollers on the job, as well as two Tampo 12-ton 9-wheel rollers.

To produce the ¾-inch rock for finishing the base and the aggregate for the hot-mix, the contractor used the Cedarapids twin-jaw crusher that operated as a primary unit to turn out the subbase material. To it was added a Pioneer 46VE unit including jaw and roll crushers and screens in a closed-circuit system. Two inches of the ¾-inch base was normally laid over the coarser base materials for

Material dumped on the road by the bottom-dumps is bladed to grade by a Cat No. 14 motor grader and immediately compacted by two Ferguson 25-ton rubber-tire rollers.

For more facts, use Request Card at page 18 and circle No. 358 ▶

"Rock is nothing new for this TD-25"

Contractor Preston Cottrell, Kalispell, Montana, owns this International TD-25 that's roughing out a mountain logging truck haul road on swampy, rocky, machine-mauling terrain. The TD-25's operator, William Clark, comments: "This '25' worked in rock all summer—works well in rock; has got lots of 'soup.' And it's got the special advantage of having the power on both tracks all the time." Owner Cottrell adds: "Best of all tractors I've ever used for road-building."

How Owners rate Planet-powered "25's" COMPARED TO THE CRAWLERS THEY REPLACED!

"TD-25 outworks any rig of its size we've used"

"Our TD-25 does more work in a day than any competitive tractor its size we've ever used," reports Gen. Supt. G. H. Crouch, for W. Owen Flowe & Son's contracting firm, Charlotte, No. Carolina. "Live track steering and over-all balance enabled the TD-25 operator to grade within .02% of the 24-degree, 1,000-foot long track slopes—within four hours. A motor grader would have taken two days to do this same job. TD-25 live track Planet Power-steering gives accurate load control with no side slip." Here, TD-25 is digging out a 20-ton boulder—a step in building the huge new Charlotte motor speedway racing track.

"TD-25 Planetary steering benches rock in 2nd gear"

"Planet Power-steering makes the TD-25 especially good for benching and bank-cutting—and it really takes the passes of rock in second gear (where 1st gear is usual with clutch-steered rigs)," states Kinney Hamm, for Albert Brothers Contractors, Roanoke, Va. "I can operate the '25' with my little finger, and with confidence." This Albert Brothers' TD-25 is blading huge loads of shot rock aside on a hilltop cut of an Interstate Project near Buchanan, Va.

1½-inch base material is produced by ...up consisting of a Pioneer primary jaw ...Cederapids Commander secondary unit. ...ed material goes to a surge bin for load... Euclids. A D8 feeds one crushing plant; ...higan 275A feeds another.

finishing; additional amounts were used for leveling courses whenever necessary.

Set hot-mix plant on hill

The 91,000 tons of asphaltic-concrete paving mix was produced in a Pioneer 101 asphalt plant that was set up adjacent to the aggregate stockpile at the edge of one of the gravel pits.

In setting the plant, the contractor took advantage of a hillside location to eliminate the loading pit that is usually required. A sharp cut was made to one side of the haul road coming up this hill, and a timber crib wall was built to support the bank. The plant was then set at the top of the bank with the loading hopper projecting over the edge.

A fleet of dump trucks hauled the hot-mix to the Pioneer paver, which laid the two 2-inch courses. Each course was rolled by two 8 to 12-ton Galion tandem steel rollers and a Ferguson 25-ton pneumatic roller in sequence.

Halfway through the 2-month operation, a Barber-Greene 848 hot plant, a Barber-Greene S-60 finisher, two 8 to 12-ton tandem steel Galion and one 117 Ferguson 25-ton roller were added to speed the operation. The combination of plants produced up to 450 tph of material.

Cold weather put a stop to the work before the seal coats could be applied. This work will be done as soon as weather permits this spring. The roadway will get an application of cutback asphalt and sand, while the shoulders will get a shot of asphalt and a coat of high-visibility chips.

Excavation superintendent for the joint-venture contractors was A. L. Willems. The superintendent of the base and surfacing operations was John M. Clayton. The project engineer for the Montana State Highway Commission on the work is Dale D. Moore. THE END

Armco Division news

■ There have been several management changes in the purchasing department of the Armco Division of Armco Steel Corp., Middletown, Ohio.

Eugene R. Coker, formerly an assistant purchasing agent for the division, has been appointed a purchasing agent. He will continue to be responsible for purchases of construction services, equipment, and heavy-equipment spare parts.

William M. Schuck, assistant to the director of purchases, will be in charge of purchasing ferro-alloys, an assignment formerly handled by John M. Leighton, who has retired.

CB&I appoints two plant managers

■ Chicago Bridge & Iron Co., Chicago, Ill., has appointed Gordon R. Loveless manager of its main eastern plant at Greenville, Pa. He has been manager of the company's Salt Lake City plant since 1957.

Alfred J. Larson will succeed Loveless at the Salt Lake City plant.

Talcott leasing services to include Puerto Rico

■ Talcott Leasing Corp., New York, N. Y., a wholly owned subsidiary of James Talcott, Inc., will lease heavy income-producing machinery and equipment to industrial users in Puerto Rico.

Rafael Machargo Del Rio, president and chairman of the board of Caribbean Investment & Leasing Corp., will handle the leasing operations. Del Rio is Talcott's exclusive leasing correspondent in Puerto Rico.

New regional manager named by Insto-Gas

■ Richard J. Conners, Jr., has been appointed by Insto-Gas Corp., Detroit, Mich., as regional manager for its central region, comprising Ohio, Kentucky, Indiana, West Virginia, and western Pennsylvania. He will handle the company's line of Insto-Hot LP-gas portable heaters from headquarters in Cincinnati.

Insley appoints

■ I. K. "Ken" Ackmann has been appointed manager of eastern-central sales, for Insley Mfg. Corp., Indianapolis, Ind. He was formerly assistant sales manager for the company.

R. J. Boatman, previously manager of eastern-central sales, is now a special sales representative for Insley, which makes power cranes and shovels.

"Better pusher control in all terrain"

TD-25 planetary steering gives the operator better pusher control of the scraper load in all types of terrain conditions," states Grady B. Stancil, Stancil Bros. Construction Co., Snellville, Ga. "TD-25 has no match for work on grades as it will track up slopes and maneuver." View shows Stancil TD-25 pushing an International Payscraper on state highway job near Lawrenceville, Ga.

"Our TD-25's save time and dynamite in rock"

"The road-building capacity of our TD-25's is something you must see to believe," declares Contractor Russell Train, Myrtle Point, Oregon. "They cut the roads out faster—save time and the cost of dynamite ripping through rock strata we always had to blast before." Here's one of owner Train's TD-25's benching out type EE Forest Service roads that will be rock-coated for all-weather use.

See how "live track" TD-25 Planet Power-steering gives you full-power momentum—and eliminates load-limiting "dead-track drag." Try on-the-go, Hi-Lo power-shifting that ends "gear-shift lag." Compare how this power-steering, power-shifting combination teams with 230 work-slugging turbocharged Diesel hp—to outwork king-sized clutch-steered crawlers job after job! Let your International Construction Equipment Distributor demonstrate the TD-25!

International Construction Equipment

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

A single Lima truck crane with 215-foot boom raised all of the 2,325 tons of structural-steel members into place for field arc welding on the new 12-story Public Service Co. office building in Denver, Colo.
Photo courtesy of Lincoln Electric Co.

Unique design cuts costs on all-welded structure

Specially devised beam-to-column connections and simple yet efficient welded column splices helped to effect a 15 to 20 per cent saving in fabrication and erection costs on 2,325 tons of structural steel for the new $9 million Public Service Co. office building in downtown Denver, Colo.

The design, using all-welded connections, was developed by engineers of the Burkhardt Steel Co., Denver, which also fabricated and erected the only previous welded-steel building in

I-H appointments

■ B. W. Lyon is the new assistant manager of the systems and data services department in the Construction Equipment Division of International Harvester Co., Chicago, Ill. He was previously general superintendent of the company's Tractor Works.

Lyon will assist in routing information not within the controller's scope, and in applying such information for greater operating efficiency.

J. C. Zibell succeeds Lyon at the Tractor Works. He was formerly general superintendent at I-H's Milwaukee Works.

W. O. Bechman, assistant to the general manager of the division, has retired.

Robert E. Scott has been appointed International truck-fleet sales manager.

Scott has served with the International truck sales organization for 21 years. Prior to his new position, he was manager of its southern motor-truck region.

Austin-Western names

■ Austin-Western, construction equipment division, Baldwin-Lima-Hamilton Corp., Aurora, Ill., has named three new district sales managers for its complete line of equipment, including power graders, hydraulic cranes and road rollers.

Henry W. Ludwig will cover Minnesota and North and South Dakota. Harold J. Feekays will handle the states of Tennessee, Arkansas, Mississippi, and Louisiana. District sales manager for Ohio, Indiana, and Michigan is B. Alton Wolfe.

Talcott Leasing names new sales manager

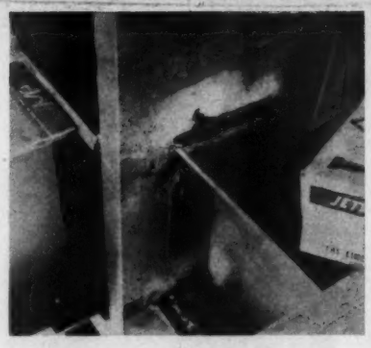
■ John P. Snyder has been appointed sales manager of Talcott Leasing Corp., a wholly owned subsidiary of James Talcott, Inc., New York, N. Y.

Snyder was formerly with the parent company in the new-business development department of the Factoring Division.

Talcott, with offices and subsidiaries in New York, Chicago, Detroit, Boston, Atlanta, Los Angeles, and Minneapolis, is engaged in all phases of industrial finance, including inventory and equipment financing and equipment leasing.

B.F.GOODRICH TIRES MOVE ROCK FILL FOR COUGAR DAM.
Finished dam will tower 485 feet, stretch 1,600 feet, and slope from a base width of 1,500 feet to a crest width of 40 feet.
Six-mile reservoir will provide water resources for flood control, power production and public recreation. $50-million project is scheduled to take four years.

...wal beam-to-column connections devised ...welding members of 12-story unit



Beams framing into both column webs and column flanges were field-welded. Note that the beam flange at left is not beveled but that the stiffener plate is—and juts out from the column flange line by the length of the bevel to meet the beam flange on the erection seat.
Photo courtesy of Lincoln Electric Co.

...n Denver—an office building for Colorado State Services. The Burkhardt engineers worked in cooperation with Ketchum, Konkel & Hastings, consulting engineering firm.

The 203-foot-high Public Service Co. building has a subbasement and 12 main floors, topped by a full penthouse level, a combination roof and machine-deck level, and three more penthouse levels. Floor area of the structure is 280,000 square feet.

A feature of the erection sequence was the use of a single Lima 60-ton truck crane with a 215-foot boom for hoisting all steel sections into place. The mobile crane, moving in on rubber tires over heavy timber tracks laid on the first-floor steel, provided more flexibility and faster operation than the guyed-derrick method.

Beam-to-column connections

All beam-to-column connections are field-welded through the first penthouse level. Shop connections are 100 per cent arc-welded. These include erection seat angles and column stiffener plates meeting beam flanges.

The connection at the bottom flange of a beam framing into a column web is unique. The beam flange is not beveled; instead, the stiffener plate inside the column flanges is beveled and juts out from the flange line by the length of the bevel to meet the beam flange on the erection seat. The seat angle is used to carry the gravity load and the moment rotation of the beam reactions in this continuous-moment design.

Column splices

All column splices were welded in the field. The temporary bolted tee-plate connectors were removed after the joint was welded and re-used by the fabricator.

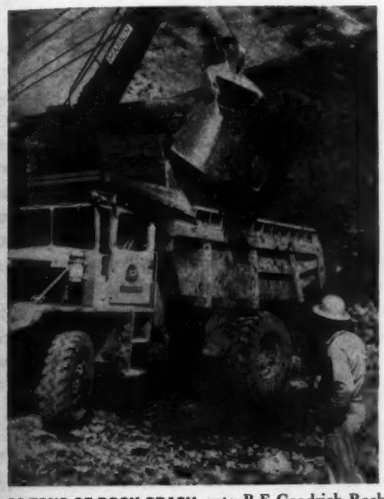
In making the groove welds at the flanges, procedure calls for thorough cleaning and peening between passes, also for cleaning and peening the final pass. The first and fill passes are made with 5/32-inch AWS class E-6010 electrode. The final cover pass is made with 3/16-inch rod of the same type. In general, the bevel of the flanges of the upper column must be such that the field weld will develop 50 per cent of the section modulus of the column. At the first-floor level, on certain critical columns, this figure is raised to 75 per cent.

On beam-to-column groove welds, 3/16-inch AWS E-6010 electrode is used for the first pass, and succeeding fill passes are made with 3/16-inch-diameter E-6027, thereby increasing deposition rate and reducing welding time.

Architects for the building were Berne, Muchow, Baume & Polivnick of Denver; the general contractor was the Mead & Mount Construction Co., also of Denver. THE END

NCSA division elects

■ Ernest E. Haupt has been elected to the board of directors, manufacturers division of the National Crushed Stone Association, Washington, D. C. He is manager of sales development and national accounts for B. F. Goodrich Industrial Products Co., Akron, Ohio.



30 TONS OF ROCK CRASH onto B.F.Goodrich Rock Service tires. Tires work two shifts a day on scrapers, bottom dumps, rear dumps, water wagons, graders, rollers and mobile cranes. Yet it's not unusual for tires to be retreaded twice.

CONTINUOUS TIRE INSPECTIONS play a key role in keeping M-C&S' equipment on the go. The B.F.Goodrich Unified Contractors Program helps contractors save on all their rubber products—and protective clothing—requirements. Ask your BFG dealer to show you how this new program can help *you*.

B.F. Goodrich helps move a mountain to build a dam

B.F.GOODRICH ON-THE-SPOT SERVICE helps M-C&S get the most out of equipment. Tire changes seldom take longer than 15 minutes. BFG Servicemobiles carry all the latest power tools, are manned by tire experts.

12-MILLION CUBIC YARDS OF ROCK AND EARTH FILL RIDE TO $50-MILLION COUGAR DAM PROJECT ON B.F.GOODRICH TIRES

They're changing the topography of Oregon's Willamette Valley. Rock quarried from a knob high above the South Fork McKenzie River is taxied down a tortuous road by a fleet of giant earth movers. It will become part of the fill for Cougar Dam, a Corps of Engineers flood control project that will be the largest structure of its type in the Northwest.

Altogether, general contractor Merritt-Chapman & Scott Corp. will move 12-million cubic yards—every one on B.F.Goodrich tires. You'll find B.F.Goodrich Rock Service tires with Cut Protected compound hard at work here. BFG developed this compound for jobs like Cougar Dam, where upwards of 30-ton loads must be carried over hard, rock-surfaced roads. It takes a mighty big boulder to gash this compound, and if it should, there's BFG Flex-Rite Nylon cord construction to withstand the impact (and resist heat blowouts and flex breaks too). No wonder many Rock Service tires at Cougar Dam can be retreaded twice.

B.F.Goodrich on-the-job service plays a key role in keeping M-C&S equipment on the go. All 600 BFG tires are inspected regularly. Tire changes seldom take longer than 15 minutes. There is a BFG tire warehouse and shop less than a mile from the project. A BFG tire record system keeps the contractor informed of costs and helps control inventory.

Supplying contractors with longer-wearing tires and dollar-saving service is an everyday job for B.F.Goodrich. On many projects B.F.Goodrich supplies everything from tires to boots to belts through its new Unified Contractors Program. Whatever *your* need, it will pay you to talk to your B.F.Goodrich dealer. His know-how can make a big difference in your profit picture. Look him up under Tires in the Yellow Pages. *The B.F.Goodrich Company, Akron 18, Ohio.*

Specify **B.F.Goodrich Tubeless or tube-type tires when ordering new equipment**

B.F.Goodrich

◀ For more facts, use Request Card at page 18 and circle No. 361

Driving 350,000 feet of H-beam piling in the tough slag-pit base of a new U. S. Steel plant at Gary, Ind., was handled by American Bridge Division with double-acting pile hammers.

Round-the-clock pile driving speeds foundation work

Round-the-clock pile driving through a 20-foot fill of brittle, rocklike, blast-furnace slag and 110 feet of heavily compacted subsoil of clay, gravel, and sand down to limestone bedrock speeded foundation construction last year of a new rolling mill at the U. S. Steel Works, Gary, Ind.

U. S. Steel's American Bridge Division handled the driving of some 350,000 linear feet of H-beam piling to 130-foot bearing over a 200 × 360-foot area of this tough material by working four rigs on three daily shifts, five days a week, with three standby rigs to assure continuous operation. McKiernan-Terry C-type double-acting hammers did the driving. Four Chicago Pneumatic Power Vane air compressors, with GM diesel engines, powered the pile hammers. Each of the 2-stage rotary-type compressors provided 145 psi of air pressure.

Piles driven in two sections

The 12-inch 74-pound H-beam piles were driven in two 65-foot sections. To speed up the work, the site was plotted into small areas, and the four driving rigs worked one area at a time. Separate splicing crews then moved in to set and weld the second H-beam section, after which the pile-driving rigs returned to drive the second section.

A calculated risk was taken in going to the "two-platoon" driving-splicing system, since the time interval between driving the first and second sections might allow the piles to take a set in the porous and highly tenacious slag, and in the clay-gravel combination beneath. But the double-acting hammers, driving normally at 110 to 120 blows per minute, were able to start the piles moving easily, even after overnight intervals.

Anvil guide attachment

A flat anvil guide attachment, developed by American Bridge Division, saved both time and money on the job by permitting quick centering on the pile head. Among the nearly 6,000 lengths of H-beam driven, there was no pile-head deformation, and consequently no need of burning off curled pile heads. Ends of the H-beam needed only to be butted and welded; reinforcing plates were then welded to either side.

In spite of the fact that the 20-foot slag layer and the heavy subsoil put equipment under a severe strain—at times it took 150 and more blows to move the pile an inch—work stoppage was minimal. All hammer repairs and adjustments were made on the job site. THE EDS

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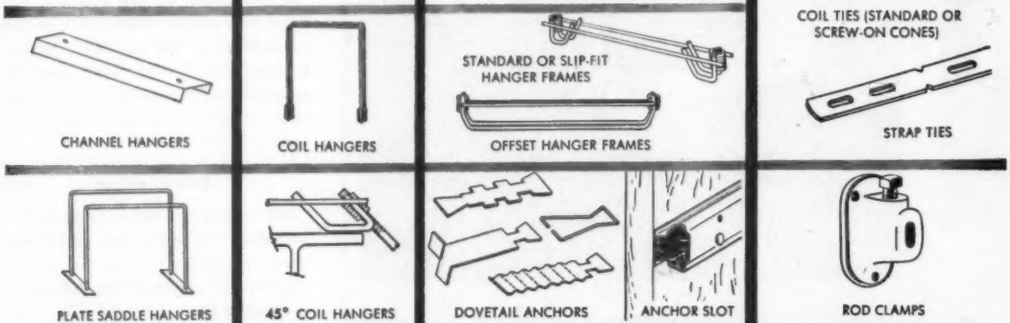

DAYTON SURE-GRIP HAS A COMPLETE LINE OF ACCESSORIES FOR EVERY CONCRETE FORMING REQUIREMENT

Our detailing department will gladly help plan your forming requirements and layouts.

Years of experience is your assurance of competent, cost saving recommendation.

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THE DAYTON SURE-GRIP & SHORE COMPANY
113 KERCHER ST., MIAMISBURG, OHIO

For more facts, use Request Card at page 18 and circle No. 362

LOW COST...EASY OPERATION

Rivinius
LIVE POWER STEERING
for CAT D8 Tractors
(prior to 14A models)

SAVES MAN-POWER: Operator fatigue goes down... performance goes up! Finger tip control Live Power Steering provides closer, faster control of D8 power and maneuverability.

SAVES CLUTCHES: No wasteful slippage and clutch wear...on each turn the clutches are engaged smoothly into complete seizure.

SAVES TIME: Levers move only 1½" and return automatically when released. Operators report they can operate a D8 one, sometimes two speeds faster with Rivinius Live Power Steering.

SAVES DOLLARS: This new Rivinius system is compact, easy to install on D8's in the field... consists of hydraulic cylinder, valve, pump, reservoir, brackets and hardware.

See your Caterpillar dealer now...or write:

Rivinius, Inc.
EUREKA, ILLINOIS

For Caterpillar Motor Graders: Torque Steering Booster ...Hydraulic Moldboard Shift...Snow Blower...Snow Leader
For Caterpillar D8 Tractors: Live Power Steering

For more facts, use Request Card at page 18 and circle No. 363

"All right, men! This here supplementing of incomes has gone far enough."

United Air Lines new base at Chicago's O'Hare Field

Symons Forms Used to Pour Reservoir

Wm. E. Schweitzer Construction Company, Evanston, Illinois used Symons Forms to pour a Reservoir 200′ long by 58′ wide by 17′ high. Approximately ⅓ of the walls were poured in one operation. The entire hangar is resting on a 2′ 9″ base pad which was also poured with Symons Forms. Symons Column Clamps were used to form columns. Symons Forms are rented with purchase option. **Symons Clamp & Mfg. Co., 4251 Diversey Avenue, Dept. C-1, Chicago 39, Illinois.**

For more facts, use Request Card at page 18 and circle No. 365

McKay acquisition

■ The McKay Co., Pittsburgh, Pa., manufacturer of welding electrodes, welding wires, chain, and chain products, has acquired Automatic Welding Co., Waukesha, Wis.

Automatic Welding will be operated as a wholly owned subsidiary of McKay.

The new subsidiary specializes in welding equipment for automatic hardsurfacing.

U. S. Steel names

■ United States Steel Corp., New York, N. Y., has appointed James W. Ramsey, Jr., general manager of traffic. Since 1954, Ramsey had been general traffic manager for the American Steel & Wire Division.

Harry L. Aufderheid has been named general traffic manager in U. S. Steel's traffic department. He had been assistant general traffic manager since 1957.

Arthur W. Thornton has been named director of engineering and research for the corporation's National Tube Division. He was formerly general superintendent of the division's Lorain (Ohio) Works. He is succeeded in that post by William L. Fader.

Lincoln Electric news

■ C. O. Planting has been appointed district manager of the Detroit sales territory of the Lincoln Electric Co., Cleveland, Ohio.

For the past 12 years he has served in the company's Los Angeles territory, engineering the application of Lincoln's arc-welding equipment battery chargers and electric motors.

Lincoln has also assigned George F. Russell to its Canton, Ohio, office and has appointed Russell Boyles field engineer in the Los Angeles territory.

Illinois manufacturer opens new facilities

■ Templeton, Kenly & Co., Broadview, Ill., has opened new warehouse facilities in San Francisco to provide faster delivery of Simplex mechanical and Simplex hydraulic jacks to users and distributors on the coast.

WIX Filter Cartridges are engineered specifically for every engine in construction service . . . gasoline or Diesel—mobile or stationary — for lube, fuel and air. Replacement Cartridges are available for:

CATERPILLAR • DETROIT DIESEL
INTERNATIONAL • CUMMINS
MURPHY • ALLIS CHALMERS
and all other
Construction Equipment

FREE Filter Survey by WIX Factory-Trained Specialist, plus a Fleet Maintenance Manual.

Even under the worst working conditions and toughest time schedules your rigs run better with WIX. ALL your engines get ALL the advantages of Prescription Filtration with WIX Oil and Air Filters on the job. WIX Filtration effectively disposes of contaminating Dirt, Dust, Abrasives and Sludge — cuts down maintenance costs, steps up efficiency and helps you get the profit you figured on.

And — WIX will make a complete Filter Survey for you FREE . . . check the correct lube, fuel and air filter cartridge replacement for every one of your engines . . . set up your service schedule and sound inventory. No burdensome stock — no delays, because your local WIX wholesaler is your convenient source for fast filter service. Write today and arrange for your FREE Filter Survey.

wix® FILTERS

SPECIFIED FOR ORIGINAL EQUIPMENT AND REPLACEMENT BY MAJOR MANUFACTURERS

WIX CORPORATION • GASTONIA, N. C.
In Canada: Wix Corporation Ltd., Toronto
In New Zealand: Wix Corporation New Zealand Ltd., Auckland

For more facts, use Request Card at page 18 and circle No. 364

Methods engineering and gang charts

by GEORGE E. DEATHERAGE, P. E.
construction consultant

Details and costs of several possible alternative methods of performing work can be developed through the use of gang charts, or the charts can be used to determine the cost of each step of work being done in the field.

Gang charts are a refinement of process charts, which use four symbols to describe work done or to be done (Figure 1). The large circle stands for an operation, or actual

Operation
Transportation
Storage
Inspection

Figure 1

work done. The small circle stands for a transportation of materials. The triangle represents a storage or delay. And the square indicates an inspection or approval of the work. The process chart is valuable in studying work under way with the idea of cutting down on operations and costs, or in planning alternative methods of handling a job so that the least expensive way can be found. Simple process charts have their limitations, however, for they do not provide a ready means of measuring costs per step, or for an entire operation, in dollars.

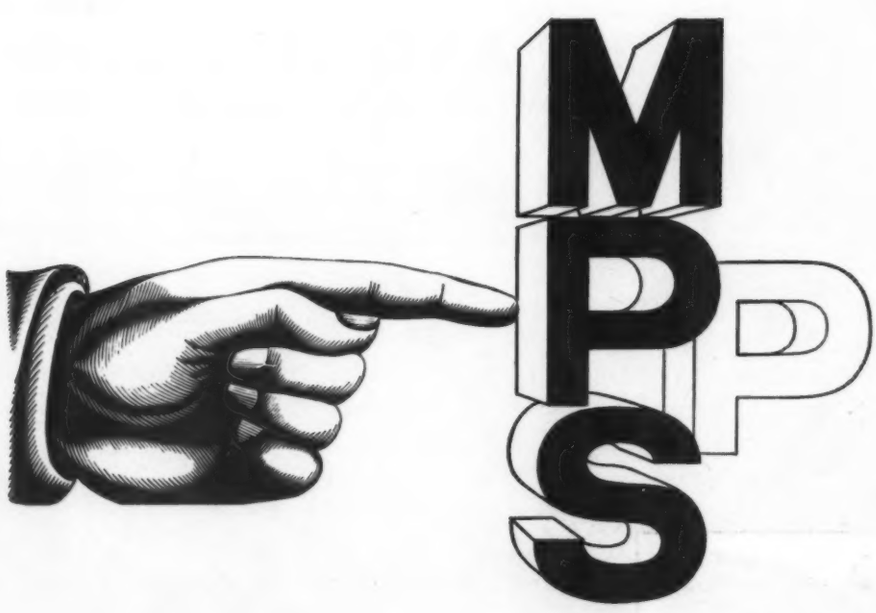
Since most construction work is done by a crew consisting of men and machines, gang charts can be made—using the same four symbols as in process charting—to show work done and to find out the cost of each step. Figure 2 shows a gang chart covering the placing of 180 cubic yards of concrete by the Pumpcrete method for a bridge superstructure. (Copies of gang charts may be obtained, without charge, upon request to the National Schools of Construction, Satsuma, Fla.)

How to make a gang chart

In making out a gang chart, first fill out the chart heading to clearly identify the specific work to be done. This is posted under "Work Cycle." In this case, the depositing of 180 cubic yards of concrete to a bridge deck is being charted. The major equipment items to be used are listed. Tools are ignored.

As this charted cost will be used for an estimate, this is so indicated by checking the item "Proposed." If this process is being used to check costs in the field, check off "Present."

When making a proposed analysis such as this, try to visualize other methods of doing the job (with crane and bucket, towers and buggies, etc.) and prepare charts to arrive at the cheapest alternative method.



May we introduce you to a new advertising signature? You will be seeing it in many trade publications during the coming months, but more important, you will actually experience it in any dealings you have with us. It's more than the initials of our company name . . . it stands for a modern concept of real, integrated service to you, as our customers.

We suggest you find out from a Marion salesman or distributor what MPPS can mean to you and your pocketbook.

MARION POWER SHOVEL COMPANY
MARION, OHIO
A Division of Universal Marion Corporation

For more facts, use Request Card at page 18 and circle No. 366

Hourly rates

In the spaces below "Hourly Rates," list the men and machines making up the gang. Listed in the example are a foreman and eight men, a truck and driver, and all of the minor equipment except hand tools. There are nine men in this gang, and this is noted in the space provided.

Above each man or piece of equipment, post the hourly rate. In the case of the workmen, it should be the basic wage rate, plus any fringe benefits that appear on the payroll. Later this estimated cost is compared directly against the actual payroll cost in the field.

In the case of the equipment, post the hourly ownership/operating cost of each rig. Use of the current rental rate for the equipment, as published by the Associated Equipment Distributors, is a good idea.

Step description

In the extreme right-hand column indicate, in their proper sequence, the various steps that have to be taken to perform the work, and number them. It is not necessary to post all of them immediately; they can be posted as you go along. Take extreme care to ensure that you do not miss any work to be done, or any materials, plant, equipment, etc., to be moved.

The first step is to get the tools and equipment assembled and on the job. This process requires an hour in the example. The hopper man has gone over to the job to assist in make ready.

Each of the crew, with the exception of the hopper man, has a large circle under his listing, with the

(Continued on page 134)

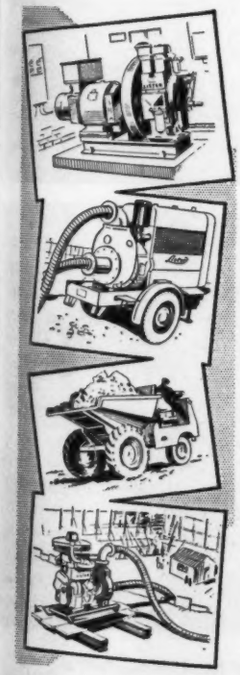
GANG CHART

Dwg. No. 137-B1
Subject Bridge Superstructure Concrete
Date 10/3/56 Cont. No. 618 Code 5-11-7
Work Cycle Place conc. by pipe line
Est. Quantity 180 Dept. Conc. Est. Cost 2.26
Plant Equipment Pumpcrete Model #200
Supt. James Foreman Atkins

Chart No. 23
Location Sta. #27
Charted By R.L.M.
Unit Cu. Yd.
Actual Cost
Present
Proposed ✓ For Estimate

DIST.	TIME	Foreman	Pump Operator	Hopper Man	Laborer	Laborer	Laborer	Laborer	Vibrator Man	Vibrator Man	Pump & Fittings Truck & Driver		COSTS	No.	Steps — Step Description
Hourly Rates		3.00	2.52	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.50	6.00			No. in Gang - 9
200	60	①		②	①	①	①	①	①	①			14.67	1	Make ready - tools.
150	15	②	⑤	②	②	②	②	②	②	②			5.15	2	Move to job site.
2 Mi.	45		⑤								③	⑤	18.27	3	Pump mach. to job.
	90	④	④	④	④	④	④	④	④	④	⚠		59.59	4	Setup mach. time.
	30	[5]	①	①	④	④	④	④	④	④	⚠		7.80	5	Inspection.
	30	⑥	⑥	⑥	④	④	④	④	④	④	⚠		3.57	6	Mach. adjusting.
	20	⚠	⚠	⚠	⚠	⚠	⚠	⚠	⚠	⚠	⚠		10.04	7	Delay - Ready-Mix.
115	360	⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧		198.13	8	Pump concrete to Deck Forms.
	80	⚠	⚠	⚠	⚠	⚠	⚠	⚠	⚠	⚠	⚠		57.20	9	50 min. hr. Normal delay.
	45		⑩	⑩	⑩	⑧	⑧	⑩	⑩	⑧	⑩		14.08	10	Dismantle pump.
150	15		⑩	⑩	⑪	⑪	⑪	⑪	⑪	⑪	⑩		4.18	11	Tools to shed.
2 Mi.	30	[5]	⑫	⑫	⑬	⑬	⑬	⑬	⑬	⑬	⚠	⑫	12.57	12	Return pump.
	10												4.80	13	Final Cleanup.
	5				⑭	⑭	⑭	⑭	⑭	⑭			1.15	14	Crew--check out.
													407.02	15	
														16	
					Vibrators & Tools in Plant Setup.									17	
														18	
													Totals		Summary
Min		715	760	775	780	780	780	780	780	780	745	75			Operations 6
Hrs		11.92	12.67	12.92	13	13	13	13	13	13	12.42	1.25	129.18		Transports 5
$		35.76	31.99	20.67	20.80	20.80	20.80	20.80	20.80	20.80	18.63	7.50	407.02		Delays 5
															Inspections 2
															Quantity 180 C.Y.
															Unit MH .7176
															Unit Cost 2.26

Figure 2.



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Simplicity, dependability, long life, continuous trouble-free service are stressed in these unbelievably versatile, air-cooled compact LISTER Diesels, exceptionally adapted to your requirements.

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Canadian Lister-Blackstone Ltd., 1921 Eglinton Ave., E., Toronto 13, Ont.

For more facts, use Request Card at page 18 and circle No. 367

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Esco manufactures the most complete line of flasher lights and barricades on the market. Our heavy duty barricades are designed for maximum economy of operation. Will not blow over. Rugged heavy-duty guard. Finished with baked-on implement enamel. Write today for free illustrated catalog.

ELECTRONIC SPECIALTIES CO.
BATAVIA 3, ILLINOIS
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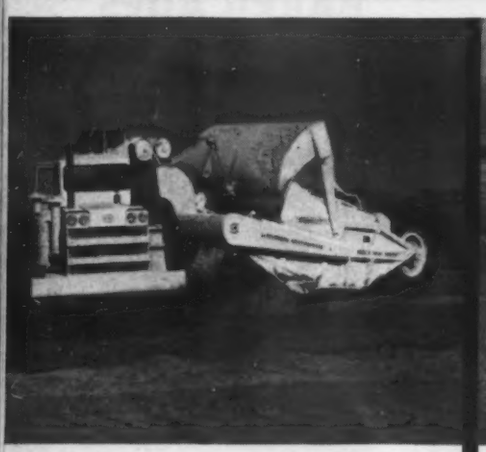
Earn extra dirtmoving profits here...

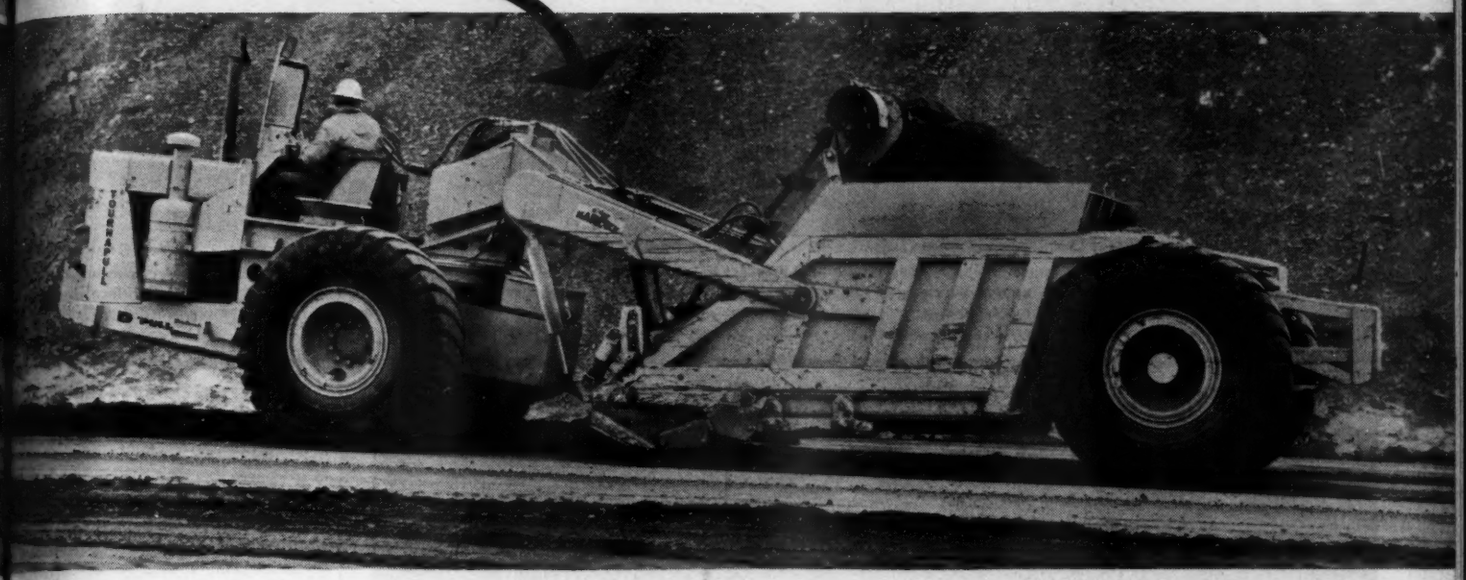


Interested in *big scraper* profits? Check big LW V-Power B 'Pull . . . 430 hp, 29 heaped yds. Or 290-hp, 20-yd V-Power "C".

With *any* LW electric-control 'Pull you can use tandem scrapers . . . *double* your load capacity at only about ⅓ extra cost.

Make your long haul jobs more profitable with LW 6-wheel C Speedpull® . . . 37.7 mph, 276 hp, 20 yd capacity. 40 yds in tandem.

...and here with double-value "D"



On production work

LeTourneau-Westinghouse 9-yd D Tournapull® proves out profitwise on any size job, as either a utility or production machine. 300-to-1 power/wt ratio, plus LW power-transfer differential, keep production high under all work conditions. You also get: permit-free roadability . . . 30-mph speed . . . choice of transmissions. And, you can add on second scraper any time for 18-yd tandem operation.

On clean-up work

Interchangeable Hancock elevating scraper *doubles* the D 'Pull's usefulness . . . picks up windrowed material, cleans up along shoulders, between forms. Electrically-driven slat-type conveyor pulverizes earth, loads up to 10 yds in less than a minute *without a pusher*. Spread time: 5 to 10 seconds. (Also available for use behind "D" prime-mover . . . an 11-ton Rear-Dump hauler.)

Pays a dollar bonus, too

Whether you're interested in the 143-hp D 'Pull* for one-machine handling on small-yardage contracts, or as an auxiliary unit in your big-production fleet, remember *this:* The "D" pays you a big *dollar* bonus in lowest original list price, and highest trade-in value of *any* scraper in its size-class. Compare prices . . . and features. See your LW Distributor soon.

*Trademark DP-2394-DC-2

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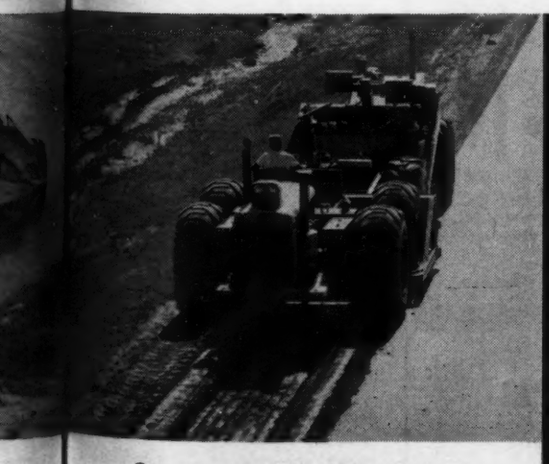
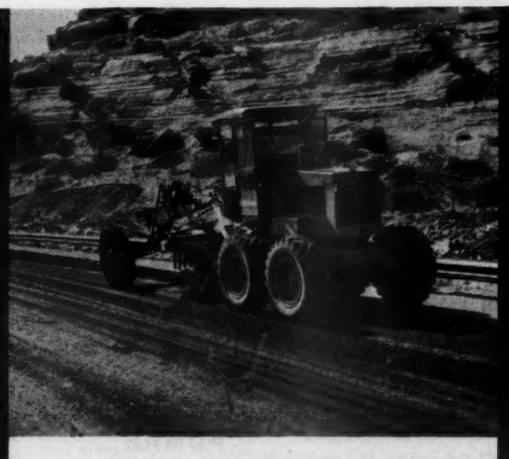
A Subsidiary of Westinghouse Air Brake Company Where quality is a habit



Get more speed, mobility on tractor work with rubber-tired Tournatractor®. 18.5 mph. 218 hp. Choice of electric or hydraulic blade control.

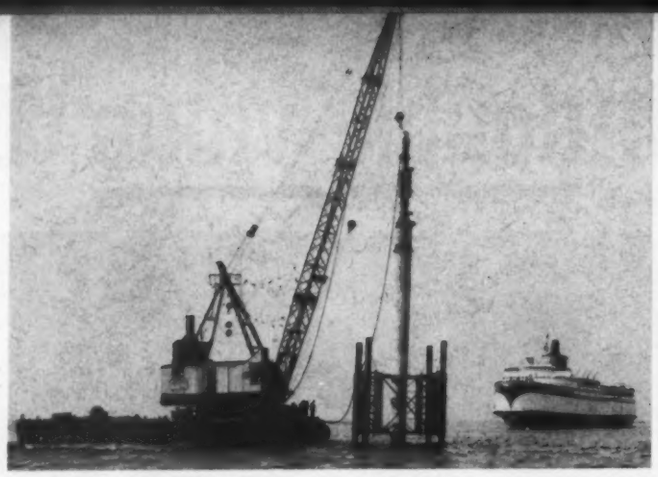


A full line of performance-proven motor graders too! 7 sizes: 85 to 190 hp, including 2 torque-converter POWER-Flow® models.

Here's a hauler designed to earth-moving "specs", *not* automotive . . . the LW Haulpak®. 5 sizes, 22 to 60 tons . . . up to 550 hp.

For more facts circle No. 369

Construction Camera



The first of 3,000 concrete piles for the 17-mile bridge-tunnel across lower Chesapeake Bay is driven as dignitaries watch from the Pocahontas, flagship of the ferry fleet that will be replaced by the crossing between the eastern tip of Virginia and Norfolk. Pile No. 1 is 54 inches in diameter and 120 feet long.

Four workmen are using a 28-foot Thor screed with gas motor to vibrate, screed, and level in one pass a concrete slab for the 19,200-square-foot ceiling on the Midwestern Instrument Mfg. Co. addition at Tulsa, Okla. The contractor is Wells Construction Co., Tulsa.

USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

The Pump That's Measured In Minutes

This pump is called the Homelite "300" Pump for a very good reason. In addition to fast self-priming, guaranteed 28 ft. suction lift, non-clogging design, and extra long life ceramic coated seal, this pump handles 300 gallons per minute . . . 18000 gallons per hour. It does the job in minutes. And, it gets to the job in minutes. It's compact, lightweight and can be carried easily to any pumping location.

All Homelite Pumps, from the top quality 2-cycle engine driven pumps down through the new, economy-priced 4-cycle engine driven units are noted for their dependable performance. Just ask for an on-your-job demonstration. With action-filled demonstrations, all the superior, buying features of Homelite Pumps can be measured in a matter of minutes.

Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE CARRYABLE PUMPS GENERATORS • BLOWERS CHAIN SAWS

HOMELITE • A DIVISION OF TEXTRON INC. • 9603 RIVERDALE AVE., PORT CHESTER, NEW YORK • IN CANADA — TERRY MACHINERY CO., LTD.

For more facts, use Request Card at page 18 and circle No. 370

management

(*Continued from page 131*)

number of the step (No. 1) written inside it. This indicates that this is the part of a step called an "Operation." The hopper man carries a small circle indicating that he is moving over to the job; the numeral 2 inside the circle stands for step No. 2.

Under the left-hand column "Time" is posted the 60 minutes required to move the tools and equipment 300 feet and to assemble them.

Now, knowing the time taken by each man to make ready—on the tools, hose, etc.—and knowing each man's rate, you can figure the dollar cost of this step at $14.67. This is posted under the column titled "Costs."

Step No. 2

The tools and accessories are then moved to the job site. It takes an estimated 15 minutes to do this, as they have to be moved only 150 feet. Therefore, a small circle is placed under each man's listing to identify the step as "Transportation," and the numeral 2 is written inside it. The pump operator has a small circle with the numeral 3 inside it, indicating that he is working on step 3—moving the pump machinery to the job. His labor is brought down to the line for step 3 and charged to this account.

The work of every man on the crew is posted on the same line for each step, even though they are engaged on different steps on the work, as long as the same time element is used. If a man is pulled out of the gang for a time that is more or less than that for the rest of the crew, he has to be dropped down and given a separate line.

In summarizing step No. 2, we find that the 15 minutes of moving to the job has cost $5.15.

Step No. 3

Here the pump operator has picked up a truck and driver moving the pump machinery to the job site. Again the small circle, indicating a transportation, and the numeral 3, indicating step No. 3, are used. It

Forms for a new concrete grandstand at the Indianapolis Motor Speedway are being set by an Insley K truck crane, background. Excavation work for improved facilities for racing fans attending the '61 annual 500 Mile Race is being done by the crawler-mounted Insley M clamshell at the lower left.

Stripping old blacktop material off a road in Edina, Minn., is this Hough Payloader Model H-90 tractor shovel. The unit, with an operating capacity of 9,000 pounds, has daily loaded up to 240 trucks of 10-yard capacity for Blacktop Service, Minneapolis. The contractor is tearing up and repairing some 70 blocks of streets.

has cost $18.27 to make this move, which is made up of 45 minutes for the pump operator, pump and fitting rental, and the truck and driver.

Step No. 4

The gang is now back together, working on the job site to set up the plant and equipment. All items but the pump and fittings carry a large circle with a numeral 4 inside. The pump item carries a triangle with the numeral 4 inside it, indicating that this is a temporary storage or delay. This has to be paid for, and the cost is included in the $59.59 machine setup time. The gang continued this setup time for 90 minutes.

Step No. 5

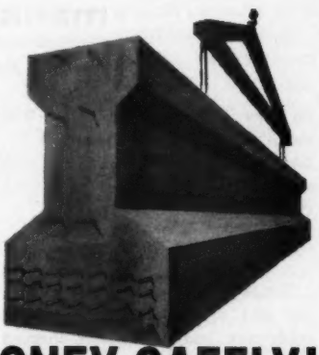
On this line is a new setup, for although some of the men are still setting up the machinery, the foreman is inspecting it. He has a square with the numeral 5 denoting inspection. The pump operator and hopper man have a large circle, as they are back

(Continued on next page)

Dependable

Richmond

products for prestressed concrete



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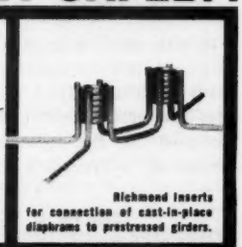
Richmond Strand Deflection and Push Down inserts for depressing strands. Special units can also be manufactured to suit individual needs.

Richmond Chairs and Spacers for void supports and spirals in prestressed piles and beams.



Richmond Inserts for connection of cast-in-place diaphrams to prestressed girders.

Richmond Inserts for anchoring to or hanging from prestressed members.

Richmond Extended Coil Tyscrus for lifting prestressed beams and girders. (2 & 4 strut)

Richmond Inserts for anchoring guard rails to prestressed girders.

Phillips Self-drilling Concrete Anchors for anchoring to any concrete members after concrete has set.

Richmond Offset Free-Fit Hangar Frame-Tys used to hang forms from prestressed "I" beams.

Richmond's Columbia-matic "8", fully automatic stud fastener for secure and safe fastening into concrete.

Shown here are a few of the many Richmond-engineered products for the prestressed concrete construction industry. For more information about them, or help with any specific concreting problem, write to:

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1911-1961 50 YEARS OF PROGRESS

For more facts, use Request Card at page 18 and circle No. 371

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PIERS

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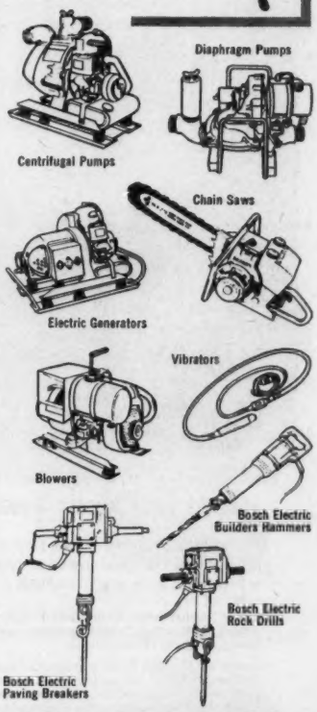
HOMELITE Factory Branches throughout the country sell and service Homelite's complete line of carryable construction equipment.



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SOUTH: GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

MID-WEST: ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

WEST: CALIFORNIA: Fresno, Los Angeles (Alhambra), Sacramento, San Francisco • COLORADO: Denver • OREGON: Portland • UTAH: Salt Lake City • WASHINGTON: Seattle, Spokane

HOMELITE
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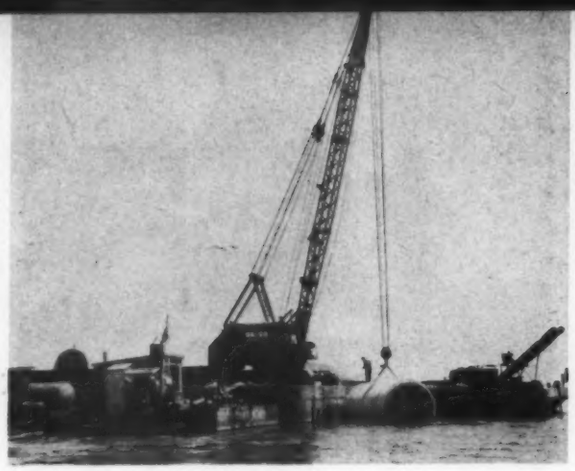
For more facts, circle No. 373

Construction Camera



Placing 120-inch cast-concrete pipe 41 feet below water surface is the job of this Manitowoc Model 3900 owned by Dravo Construction, Ltd., Toronto, Ont., for a sewer-outfall job for the city. Divers seal the submerged sections with gaskets and 3-foot-long bolts.

A 140-foot-wide puller, with 5-foot-high Terra-Tires built by The Goodyear Tire & Rubber Co., is pulling a 140 × 500-foot concrete-block mattress into place during revetment construction by the Corps of Engineers on the lower banks of the Mississippi. Mattress blocks are connected by imbedded copper-covered wire fabric.

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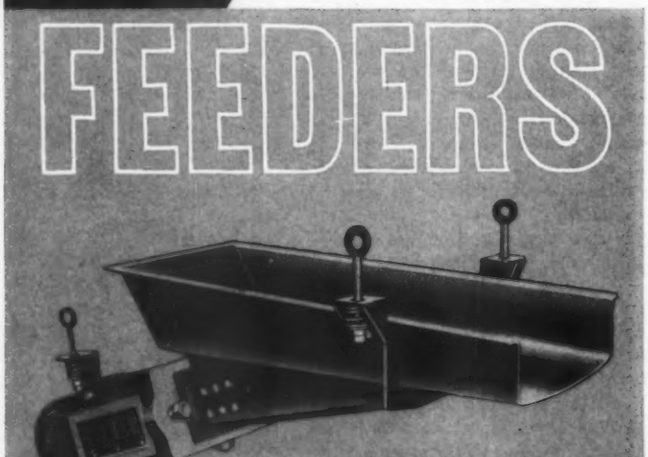
SYNTRON VIBRATORY FEEDERS



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For more facts, use Request Card at page 18 and circle No. 374

management

(Continued from preceding page)

on step No. 1—make ready. The pump symbol is still a triangle (a delay) as it is not operating. This step took 30 minutes, the cost being charged to steps 5, 1, 4, and 9.

Step No. 6

The gang is still setting up, adjusting and preparing to receive the ready-mix, and the time is charged to the steps noted within the symbols.

Step No. 7

Here the entire gang and the equipment are tied up, waiting for the ready-mix trucks. They lost 20 minutes—the cost of which is $10.04—indicated by the triangle symbol (temporary storage or delay).

Step No. 8

In this step, the concrete is being pumped to the deck forms, and there is no additional delay. It required 6 hours, or 360 minutes, to place this 180 cubic yards. The symbol here is a large circle, and it is the only "do" operation in the work cycle. All the other operations, transportations, delays, inspections, or approvals involve getting ready to do the job or cleaning up at completion. How many of these could be eliminated?

Step No. 9

A gang of workmen will never produce 100 per cent of the time because there will be delays of one kind or another. The same is true of machines. This lost time must be reflected in the production costs, and this is best done by using a 50-minute hour or an efficiency of 83 per cent.

As a "Proposed" or estimated time of production is being prepared, this factor should be reflected in the column headed "Time" for each step in

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For more facts, use Request Card at page 18 and circle No. 375

A red-hot rivet is flipped by a heater to a workman with catching can on the new B&O railroad trestle under construction near Homer City, Pa. Three short spans are being replaced with a 129-foot girder span by Bethlehem Steel to allow for the widening of U. S. 119 under the trestle.

Pushing washed sand from conveyor discharge into a storage pile at the plant of Ramrod Gravel, Inc., Sayreville, N. J., is an International TD-15 crawler. Ramrod's all-electric processing operation produces 200 tons of sand and gravel an hour. The TD-15 strips 5 feet of overburden to uncover washable material.

the work cycle. However, if the time considered for any step in the process is based on historical records, rather than estimated, this system need not be used; the lost time is already embodied in the actual time recorded on past jobs.

Steps 10 through 14

The same reasoning and procedure used to describe the various steps up to this point are also used for steps No. 10 to No. 14 inclusive. The cost of the vibrator and small tools does not appear in this analysis as it is assumed that they are carried in the estimate as job overhead under "Tools and Equipment."

Chart summary

At the bottom of the gang chart, the vertical columns are summarized for each man and piece of equipment, showing the total time in minutes, hours, and dollars, and a grand total is arrived at for the work cycle.

The total in dollars divided by the concrete yardage gives an estimated placing cost of $2.26 per cubic yard.

The chart might have been simplified by estimating the machine setup time, adjusting time, etc., as one item or step. However, this was broken down in detail to illustrate that it is possible to break down estimated and actual time to a very fine point.

The figures show that a total of $407.02 has been spent for the complete job, of which only $198.13 was spent in actually pumping the concrete. The difference of $208.89 was expense incurred in preparing for the work. More money has been expended to make ready than to do the job.

We find also that there are six operations, five transportations, five delays, and two inspections. Only one "do" operation was needed.

How can costs be reduced here? Outside of reducing the time required to pump the concrete, savings can be achieved by reducing all delays, keeping transportations to a minimum, cutting the time consumed by each delay or transportation, and shorten-

(Continued on next page)

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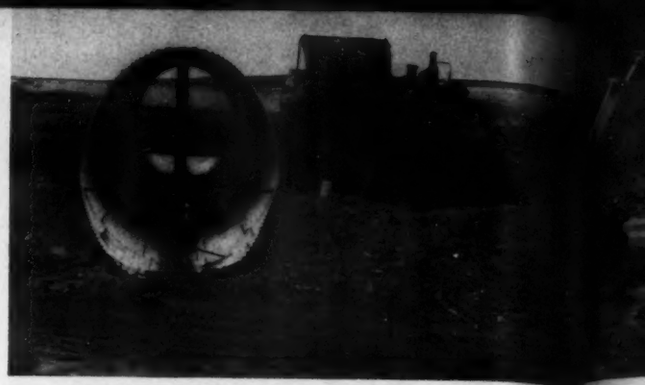
Construction Camera

Suspending an elevatorlike platform rig in the air to work against a 95-foot cliff on the $4.3 million Thomaston Dam project near Thomaston, Conn., is a long-boomed P&H crawler crane owned by Oneglia & Gervasini, Inc., Torrington. Two rock drills were mounted on the contractor-built rig to drill 2,000 bolt holes.



To equalize water pressure from two man-made lakes against an earth berm that will carry relocated Union Pacific track at the Ice Harbor Dam project near Walla Walla, Wash., two Armco Multi-Plate corrugated metal pipes are being installed in the fill.

management

(Continued from preceding page)

ing the distance materials are moved.

Checking field costs

If this chart, instead of being used as a basis for estimating, had recorded work and costs in the field, and the original estimate was $1.50 per yard of concrete in place, we could pinpoint where the additional 76 cents per yard was spent that brought the actual cost to $2.26.

Contractors will find that in using gang charts to reduce costs and increase production, they are most effective in checking field costs that run higher than estimated. This information will enable them to correct conditions before more profits are lost and to accumulate valuable data for future estimating.

Next month's article will deal with "Selecting Alternative Work Methods."

Warner & Swasey releases 5 films

■ The Warner & Swasey Co., Cleveland, Ohio, has released five 16-mm color motion pictures showing its Gradall and Hopto earthmoving machines in action. Three of the films have sound.

"Digging for Profits" shows Gradalls in operation.

"Water Conservation" is a Gradall film portraying construction and maintenance work on irrigation and drainage-system projects.

"The Railroad Gradall" shows the Gradall on right-of-way work.

"G-1000" emphasizes the Gradall plant and the largest model.

"The Big Decision" features the Hopto.

The films are available through Warner & Swasey dealers.

Airco oxygen plant to supply Bethlehem

■ Air Reduction Sales Co., New York, N. Y., has signed a contract with Bethlehem Steel Co. for the construction and operation of a tonnage oxygen plant to supply Bethlehem's blast furnaces at Johnstown, Pa.

The $5 million air-separation facility, with a production capacity of 675 tons of oxygen per day, is scheduled for completion in September 1961.

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self elevating

high capacity

batching plant

The new HELTZEL SELF-ERECT MOBILE BATCHING PLANT is so mobile — so easy to erect — that you can batch at one location in the morning — move miles away and be set up, ready to batch again the same afternoon. Here is the first high-capacity mobile plant that offers all the production advantages of a permanent installation.

Erection is fast and economical — no crane is required — set-up cost for plant shown above is around $200.00. A two-man crew with a front-end loader can set up in 2½ hours or less. Self-contained hydraulic mechanism elevates cement unit.

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For complete information, send for illustrated bulletin or contact your HELTZEL distributor.

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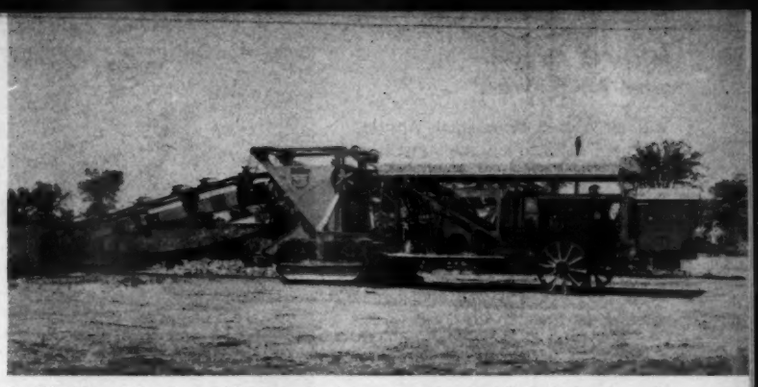
Operating at a 90-degree angle, this Minneapolis-Moline 445 backhoe and loader digs a water-service trench for the Taunton (Mass.) Water Department. The right-angle operation and long reach of the backhoe makes it possible to handle water-service connections without impeding traffic.



Modified by reinforcing and boom extensions, a Buckeye Model 48 ditcher is used by Damore Bros. Contracting Co., Ltd., Niagara Falls, Ont., for pipeline trenches. It has enough horsepower and torque to work at 30-foot depths. The depth of the cut is controlled by adding or removing boom extensions.

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AGC booklet discusses single-contract system

■ The Associated General Contractors of America, Washington, D. C., has published a 12-page brochure titled "Save Construction Dollars with America's Basic Construction Method, The Single Contract System."

The booklet points out how time and money can be saved by means of the system, through efficient coordination of the complex details in a modern construction job by the general contractor. It states that about 95 per cent of federal and 85 per cent of state contract-awarding agencies, as well as a majority of local-government and private-enterprise authorities, employ the single-contract method.

Individual copies of the booklet are available without charge upon request to the AGC, 1957 E St. N.W., Washington, D.C.

Engineering manager named by Heebner

■ Nicholas P. Roth is the new engineering manager of George K. Heebner, Inc., industrial engineers, designers, and builders of Philadelphia.

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HUSCO 4-Plunger, 45 G.P.M. Series 3200-SP Valve

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• Follow the lead of railroads, municipalities and industry. Place your underground pipelines while important traffic continues to roll. You can push pipe and casing from 3" to 4' in diameter as far as 250 feet without disturbing the surface. The hole is fully supported. No danger of settling during the job or later. Before you decide on an expensive tunnel, or disrupt traffic flow with a ditch, check the Salem Trench Drills.

Free . . .

Salem trench drill bulletin gives complete facts. Yours on request.

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For more facts, circle No. 380

Idlewild Airport wins ASCE award

■ New York International Airport has been selected by the American Society of Civil Engineers, New York, N. Y., for its 1961 award as the Outstanding Civil Engineering Achievement of the Year.

The airport, which was started about 20 years ago, was one of 11 nominations made in the competition by directors of the society's 15 districts. It became eligible for the award because it was deemed 75 per cent operational; work is still proceeding on the airport's construction program.

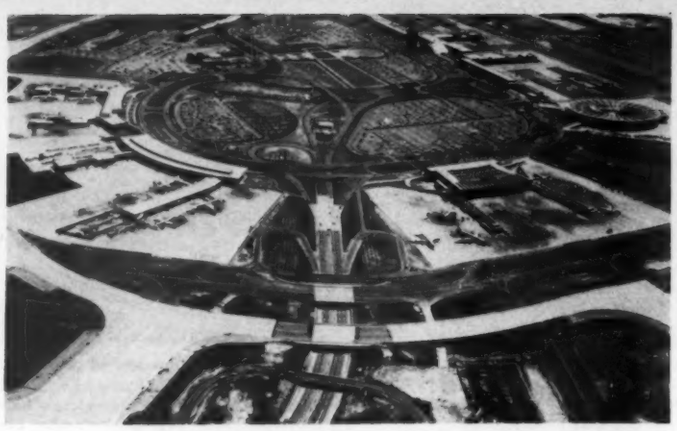
A jury of engineering magazine editors acted as judges, and its decision was ratified by the ASCE Board of Direction.

Judging was based on three general categories: engineering skill demonstrated, evident engineering progress, and value of the project to mankind.

The airport is a unique complex, covering 4,900 acres. It is designed to handle nearly all of the metropolitan area's international air traffic, half of its domestic long-haul traffic, and one-quarter of its domestic short-and-medium air traffic. Terminal City, the core of the complex, will have a total of 10 terminals, 7 of which are in operation. It also includes a 150-foot-high control tower, a central heating and refrigeration plant, a chapel area, ten miles of roadways, parking space for over 6,000 cars, and the 220-acre International Park. The runway and taxi system now has five runways and 20 miles of taxiways.

By the end of 1960, some $288 million had been spent on the project by The Port of New York Authority, which developed and operates the airport under a lease with the city of New York.

The award, a metal plaque, will be presented to the Port of New York Authority this spring.



Idlewild Airport, covering an area of 4,900 acres, has been selected as the Outstanding Civil Engineering Achievement of the Year by the American Society of Civil Engineers.

PCA board elections

■ H. A. Sawyer was elected chairman of the board of directors of the Portland Cement Association, Chicago, Ill., at the association's annual meeting.

Sawyer, who is chairman of the board and president of Lone Star Cement Co., New York, N. Y., has served on PCA's board of directors since 1955.

The following new directors were named to the board: L. E. Bayer, R. M. Craigmyle, H. R. Schemm, Charles E. Shearer, and Paul Sunderland.

Engineers, Inc., appoints

■ Engineers, Inc., engineering and consulting firm of Newark, N. J., has named Robert P. Lockitt and Edward G. Stampfl project engineers. They will handle liaison with clients and will be responsible for design, construction, and plant start-up of all projects.

For more facts, use Request Card at page 18 and circle No. 381 ▶

Faster dozing because you change speed range or direction with a flick of the wrist —no loss of power or momentum—no gear-shift guesswork or clutching delay—more productive time on every cycle.

Full-power shift . . . fast-as-a-fox maneuverability

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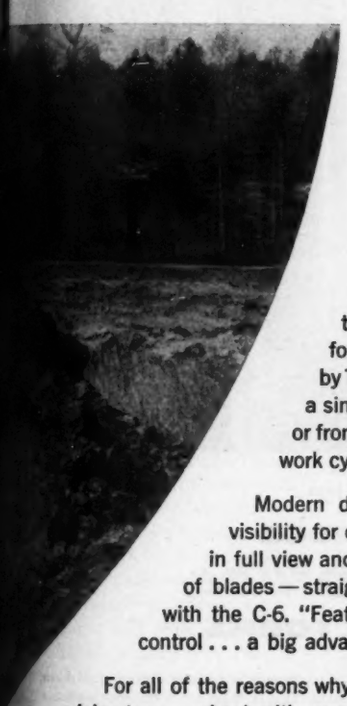
A DIFFICULT DITCHING JOB is being done on a grading and utilities contract for the 75-home Worthdale Subdivision, Raleigh, N. C., by the Blue Contracting Co., Sanford, N. C. For the hard-to-dig dirt, the firm's ¾-yard Lorain Model 26 is used. An estimated 6,000 feet of 36 to 60-inch-wide trenches will be dug through clay and sandstone to a depth of 6 feet. The Lorain has been averaging 600 feet of trench per 10-hour day.

"George! Speak to me."

...and overall work-ability

...put the "EUC" C-6 in a class by itself!



No matter what your dozing requirements may be—from small grading work for land improvement, plant sites or secondary road construction to the big yardage projects—the new Model C-6 Euclid Crawler offers the best return on your equipment investment.

The C-6 has proved its ability to "doze circles" around other tractors in the 200 h.p. class on job after job. One of the reasons for this outstanding performance is the full-power shift provided by Torqmatic Drive. There's no time lost in clutching and shifting... a simple flick of the wrist changes from one speed range to another, or from forward to reverse and back again. You save seconds on every work cycle . . . keep power matched to the load and job conditions.

Modern design, with rear-mounted radiator, gives the operator better visibility for dozing. The blade is close to the front of the tractor where it is in full view and provides good balance and stability. There is a complete line of blades—straight, angle and "U"—engineered for top dozing performance with the C-6. "Feathered steering" results in smooth turning and positive track control . . . a big advantage on difficult slope work.

For all of the reasons why the C-6 has more work-ability on dozing . . . and other crawler jobs, too . . . check with your Euclid dealer for performance facts and figures.

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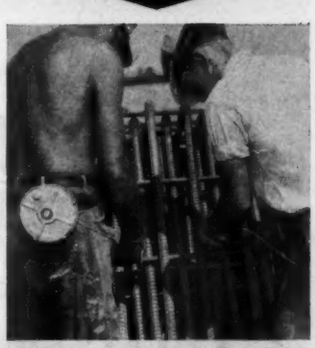

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Winter-work safety problems

by R. F. SHAW, Executive Vice President • The Foundation Co. of Canada, Ltd., • Toronto, Ont.

Imagine, if you can, a pitch-black Arctic winter night, fifty below zero, a high wind and blowing snow.

Here and there outside the tents and huts are Jeeps, trucks, and snowmobiles with their engines turning over. If they are allowed to stop they'll never go again. The fuel truck crawls from machine to machine, checking the oil and filling the gas tanks.

When all have been refueled the serviceman returns to the fuel dump, picks up a tank truck with diesel oil and starts out again. Now he must refuel cranes, dozers, trucks, and oil stoves.

The first stop is a long building with an oil stove in each room. The serviceman fills one stove, then another.

Suddenly there is a blinding explosion and the sky is red with the most terrible of Arctic accidents—fire! There is no water. It's tough enough to melt ice for drinking.

Bulldozers fight the fire by pushing the burning rooms out of the long building—downwind.

Then the investigation. All the usual precautions seemed to have been taken, but what had happened?

Why, gasoline had found its way into the diesel-fuel can!

Of what use are carefully marked and colored tanks, drums, and cans, or carefully separated operations for the handling of diesel and gasoline fuels, when the man is confused and made miserable by dark, wind and cold, and blowing snow?

To me this story illustrates the problems of safety in the far North. They are the same problems we face in more temperate climates, but each problem is exaggerated by Arctic conditions.

The selection, testing, clothing, training, feeding and housing of men are far more important there than in the "South." The selection, handling, and maintenance of equipment are vital to safety and survival.

Instinct and fear won't save. In the Arctic both of these reactions can increase the danger of destruction. If a man becomes lost, cold, frostbitten,

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bored, sick, or just plain overheated, he had better do some double hard thinking to escape the peril caused by his lack of planning.

Fear is dangerous, but reckless courage is worse. The northern fliers have a saying that wraps it all up neatly—"There are old pilots and there are bold pilots, but there are no old, bold pilots."

Of the four fatal crashes on the construction of the Eastern DEW Line one was caused by bad mathematics on loading, one was mechanical, and two were the last flights of young, bold pilots.

Reckless behaviour in the air or on the ground is doubly dangerous in the North. It's a long way to the doctor.

In brief, Arctic safety requires such careful planning that instinct and fear and bravado are unnecessary.

I would like to discuss some of the particular problems encountered by men, machines, and materials when they go to the far, far North.

Men and morale

For safety in the Arctic, a man should be well selected, well trained, well clothed, well fed, and well housed. He should be kept busy, clean, amused, and healthy.

The selection procedure should include both physical and psychological tests. Illness is hard to treat when the doctor is 500 miles away. But the breakdown of morale is worse than physical illness. Isolation is the cause!

In June of 1955, the ice air strips were melting north of Hudson Bay and the lakes and bays would not thaw enough to receive float planes for five weeks.

A week after the construction camp at Site 29 of the DEW Line began its long, lonesome wait, an aircraft flew over and free-dropped the mail.

Sure enough, there was a letter to Bert Jones from the Missus. It seems that Bert's mother had taken a turn for the worse, and what with Jamie down with the mumps how could a body leave the kids and go all that far away to help out with Mother Jones and what did Bert think?

Now Bert sat right down and answered that letter and muttered something about foolish women. All she had to do was ask her sister to come in for a few days.

He dashed it off, addressed and stamped the envelope, and marched right off to the time office where his arrival caused some merriment. What was all the rush? For the next five weeks Bert could receive letters but he couldn't send any. So Bert walked out of the time office and kept right on going. He was determined to walk out to civilization. Luckily, he was persuaded to return.

Then there was the camp where cold and snow, darkness and wind killed the morale of a whole crew. Panic is a very infectious disease. The whole gang "quit." They walked off the job, their equipment froze up, their airstrip snowed up, and only then did they realize that a wildcat strike in the Arctic can mean death. A much subdued crew was rescued by the Air-Sea Rescue branch of the Air Force.

In addition to careful selection of men, morale can be kept up by:

1. Constant vigilance and prompt changes when there are signs of a let-down;
2. Short employment contracts—say eight months;
3. Good food;
4. Good recreation program—but no mountain climbing or skiing. The weather is too uncertain, and the doctor is too far away;
5. Constant radio communication with the doctor and an occasional visit by the doctor to the site. It's amazing how that pain will disappear just before it reaches the doctor;
6. Cleanliness and comfort—but these will be dealt with separately.

Clothing

My first trip to the Arctic was in February. I took advice—from everybody—and left home somewhat warmish, dressed in all of the latest Arctic gear. I went from my heated home to a heated car, to a heated aircraft, to a heated snowmobile, to the officers' mess, etc. For two solid weeks, I was overheated. Now this is dangerous! If my jeep had suddenly been lost and stalled in a "whiteout" I would soon have felt the cold through my moisture-laden clothing.

The rules on clothing are simple:

Be sure you can put them on and take them off easily as needed.

Keep them free but snug enough so that they don't hamper movement.

Be sure you can cover your face and and still breathe through an opening to the outside.

Keep your clothes aired and dry. Open up your outer clothing for airing whenever the weather or your situation permits.

Be particularly careful of feet and hands. The mitts and mukluks must

(*Continued on next page*)

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(Continued from preceding page)

be carefully selected for warmth and dryness. Good mukluks have mesh insoles that draw moisture out of the feet. When mukluks are removed the ice is knocked out of these insoles.

Keep clothing and body clean.

Beards are not a recommended article of wearing apparel. They break all the rules. That is, they are hard to keep clean and dry, and they definitely are not comfortable.

Oil and grease destroy the insulating value of clothing, but washing it in gasoline and hanging it by the stove is even less desirable.

Housing

Housing should obviously be well insulated, well ventilated, well heated, and well lighted.

But in addition, each housing unit should have a carpet-covered wood floor and facilities for washing and urinating.

The ground in the Arctic is permanently frozen, so it is not possible to dig a trench and bury a sewer line. If money is available a heated "utilidor" can be installed to carry water, sewer, heat and power lines, but construction camps don't rate such luxuries.

Usually water is drawn from a lake by heated tank, truck, or sleigh. The ice cover on the lake may get to be six feet thick, but a trap door and a little protection will keep your "water hole" workable.

Latrines usually discharge into 45-gallon fuel drums. In the summer, these drums are pumped into a tank truck, which is discharged at a carefully selected site. In the winter time, the drums freeze solid and are hauled away and left to await the summer thaw. Frequently the sewage drums are deposited on the ice out at sea.

Garbage should be carefully collected and burned.

Heating requires special attention. The fuel-oil supply should be outside and piped in to avoid spillage on the floor. Housing units should be spaced out to reduce fire hazard.

Ventilation must be watched closely. There is a tendency to seal up tent or hut, then light the stove. Under these circumstances, carbon-monoxide poisoning is a real danger.

It is better to have a separate laundry building, as the humidity from drying clothing can penetrate and destroy the insulation of a dwelling unit.

Medical

The Arctic is a healthy place. It has no typical diseases. In fact, the Eskimo has been so little exposed that he has a low resistance to the common contagious diseases from the South. For the protection of all, therefore, visiting Eskimo villages should be discouraged.

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First-aid facilities should be maintained at every camp and minimum hospital facilities should be not more than 200 air miles away. The doctor should stick close to his radio. However, occasional trips by the doctor to outlying posts are good for morale, and his inspection of hygienic conditions is valuable.

Men with serious injuries or illnesses should be flown south as soon as practicable.

A word about alcohol. I have often been curious about how the stuff could cool one down in the summer and warm one up in the winter.

As with every other hazard, the North points up the truth. Alcohol lowers the body temperature. What it does to abilities is well known. Bearing in mind the hazards and the isolation, the best rule for the North is "No Alcohol"!

Frostbite should be detected early and cured by exposure to room temperature. Rubbing with snow is not a cure. Serious frostbile must be treated by the doctor.

Snow blindness is a real nuisance. It can be avoided by wearing dark glasses, detected by a burning sensation in the eyes and sometimes by nausea, and it can be cured by lying down for several days with the eyes covered.

Most of the animals in that region will not harm humans, but the polar bear is a true friendly clown who will not eat a human unless he's hungry and then the eating will be done in the most friendly fashion.

Hunting is not allowed in the Canadian Arctic except by Eskimos. But a rifle (sealed by the Royal Canadian Mounted Police) is a good precaution.

A beautiful clear winter day may tempt the unwary to start off across country on foot or in a snowmobile. A rise in the wind will start the snow blowing and you're lost in a whiteout.

To avoid this situation, all roads and trails should be marked with drums or flags at short intervals.

If you do get lost—think!—then backtrack only if you're sure. If you're not, dig down into the snow and cover up—then wait for rescue or clearer visibility.

If you get cold, exercise. If your clothing gets damp, let it freeze and then beat the ice out of it.

Equipment

The major problems with equipment in extreme cold are crystallization, sluggish oil and grease, and vapor. "Winterizing" covers most of these problems, but there are a few points worthy of special note.

If you cannot find a heated shelter for your equipment, then leave it running; otherwise, you will lose time and dollars trying to start it up again. Gasoline engines should run with a little throttle to avoid carbon.

Eighteen inches of ice is enough to support a D8 tractor—almost. I suggest a 24-inch minimum.

A heated shelter is necessary for the operation of some equipment. When building such shelters, remember the man who will attempt to crawl in beside the flying machinery to get warm.

Fire

I have left this part of my discussion to the last. There is no disaster in the Arctic more dreaded than fire. It can wipe out food, clothing, shelter, and transport all at one blow. Arctic fire is hard to fight because there is no water, and pipes freeze whether above or below ground.

But some precautions can be taken:

1. Duplicate and separate everything possible.
2. Wherever possible have the fire for your heating system outside and away from the building heated.
3. Use fireproof building materials and supplies. Wood crates are a menace.
4. Study your extinguisher problem with respect to the type of fire that might occur and also with respect to the behavior of the extinguishers under condition of extreme cold.
5. The bulldozer is a very effective fire-fighting tool. It simply moves the blazing material to a safe place.

In conclusion, I must emphasize again that the hazards of construction in the frozen North are not unlike those found elsewhere, but the dangers and risks are greater.

To beat these hazards, care and planning are essential. Nothing can be left to chance. THE END

(Taken from a paper presented at the last session of the National Safety Congress.)

Division sales manager named by Posey Iron

■ New sales manager of the steel-plate division of Posey Iron Works, Inc., Lancaster, Pa., is Raymond K. Strayer.

Strayer worked for Posey Iron from 1925 to 1958. He is now rejoining the Company.

Posey Iron specializes in customized steel-plate products.

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The Verrazano-Narrows Bridge between Brooklyn and Staten Island will link the parkways and expressways of Long Island, Westchester and New England with the arterial systems of New Jersey and other states to the south and west. Traffic will be able to by-pass the congested streets of New York.

This bridge sets a new record for the longest center span of any suspension bridge in the world—4,260 feet—60 feet longer than the Golden Gate Bridge. The two side spans are each 1,215 feet long making the total length 6,690 feet.

The Verrazano-Narrows Bridge has been a dream for over 70 years. Its estimated cost is $320,000,000. Plans call for double-deck roadways providing 12 traffic lanes. The main towers are 673 feet high and the lower deck at mid-span will be 228 feet above water.

Main cables. Each of the four main cables will be 35⅞" in diameter and will consist of 26,108 individual wires. The cables will be spun from 146,000 miles of No. 6 gauge Galvanized Bridge Wire—enough to stretch nearly 6 times around the world.

In addition to the 28,500 tons of Tiger Brand Galvanized Bridge Wire, American Steel & Wire Division of United States Steel Corporation will furnish 1,048 Suspender Rope Assemblies, fabricated from 392,000 ft. of 2 9/16" diameter Tiger Brand Prestressed Galvanized Bridge Rope. Also, 56,000 ft. of 1-inch Galvanized Bridge Strand Hand Rope Assemblies and 575 tons of No. 9 gauge Galvanized Wrapping Wire.

American Steel & Wire not only has the engineering experience necessary for their role in this tremendous job, but also the vast facilities to produce the various types of wire, rope and strand. American Bridge Division of United States Steel will erect the complete cable suspension system which includes 38,500 tons of Bridge Wire, plus Suspenders, Hand Ropes and Main Cable Wrapping Wire.

For further information about USS Tiger Brand Wire Rope and Bridge Strand, write American Steel & Wire, Dept. 1123, 614 Superior Ave., N.W., Cleveland 13, Ohio. *USS and Tiger Brand are registered trademarks*

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DIGGING SANITARY-SEWER LINES to an average depth of 10 feet on the 1,000-acre Sommerset Development near Seattle, Wash., is a Manitowoc Model 2300 backhoe. The rig, owned by W. J. Halleran & Sons, Inc., of Redmond, averaged 300 feet a day, despite digging in almost solid rock.

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Moline changes name; organizes new divisions

■ Motec Industries, Inc., is the new name of the Minneapolis-Moline Co., Hopkins, Minn. The name Motec is derived from "Moline technology," and the change was made by the corporation to better reflect the increasing diversification of the organization's business.

The company has also established a new Automotive Division, which will supply manufacturers of road-building and material-handling equipment, and others, with power trains and components. A feature of the division is its design and development service. Moline sales engineers will work with manufacturers of all types of power machinery to insure standard dimensions, permitting interchangeability of components in new equipment.

Roger R. Hipwell has been named manager of the division and George W. Balch, sales engineer.

Another new Moline division is the Mopower Construction Equipment Division. Mopower's current products are Big Mo wheeled tractors, McTrac crawlers, and a full line of attachments for general-purpose highway and building construction.

Bert F. Whitbread is sales manager of the Mopower division.

Foundation Co. elects

■ Richard M. Johnsen has been elected president and director of The Foundation Co., New York, N. Y. Previously a vice president of the company, Johnsen has been in charge of the Stratton, Ohio, project being built for Ohio Edison Co., and was key man for the company on the Chase Manhattan Bank project in lower Manhattan.

The Foundation Co. specializes in construction of bridge piers and building foundations.

Regional representative for Jackson Products

■ Kenneth C. Tate has been appointed Pacific Northwest regional representative for Jackson Products, Warren, Mich., producers of arc-welding and safety accessories.

Tate will work out of Portland.

SCOOPING UP A LOAD OF SILTY CLAY on a site-preparation project for a 10,000-foot runway and parallel taxiway, 10 smaller taxiways, and a terminal building at a new airport facility at Memphi Tenn., is a Caterpillar DW20-456 tractor-scraper, push-loaded by a Cat D9. The contractor, H. N. Rodgers & Sons Co. of Memphis, is moving an average of 20,000 to 25,000 yards per 18-hour day for the project, which calls for excavating approximately 2,500,000 yards of material varying from 10 to 12 feet deep, as well as draining and paving the 150-foot runway and 75-foot taxiways.

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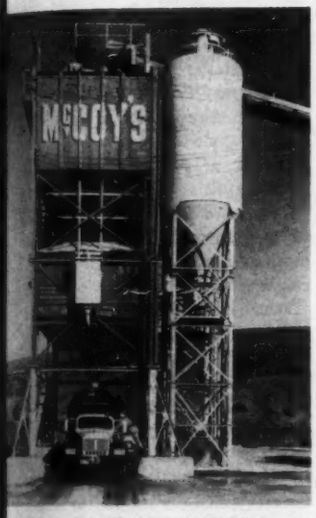

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Hertz Foundation offers scholarship service

■ The Hertz Engineering Scholarship Foundation, Los Angeles, Calif., is offering a free service for companies that wish to sponsor engineering scholarships but do not have scholarships administrative facilities.

The foundation will absorb all administrative costs of the scholarships, enabling all of the money offered by the company to go directly to student aid.

Details of the program may be obtained from the Hertz Engineering Scholarship Foundation, 1314 Westwood Blvd., Los Angeles, Calif.

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February 5-9, 1961
photograph by CONTRACTORS and ENGINEERS MAGAZINE
Robert C. Burton, Publisher

Annua

Contractor suggests five
to improve business con

Contractors and Engineers staff

"Prequalify your customers. Le
the financing to others. Know
products. Leave the estimating to
Preach the gospel of ownership
pense." A contractor handed the
sociated Equipment Distribu
these five suggestions for the im-
provement of business conditions in
both the construction and equipment-
distribution fields.

Speaking at the closing session of
the 42nd annual meeting of the AED
at the Statler Hilton Hotel in Los
Angeles last month, M. Clare Miller,
acting president of the Associated
General Contractors of America and
president of San Ore Construction
Co., McPherson, Kans., indicated
that dealers share with contractors
in the blame for the unprofitable
business condition, as well as in its
consequences.

Miller urged dealers to check their
customers' capital, supervision, and
equipment much in the manner in
which the contract-awarding agen-
cies prequalify their bidders. This, he
said, would put the equipment in the
hands of those who can do the work
at a profit. With the capable con-
tractors generally avowed to include
a profit in their bids this year, both
industries would reap the benefits.

Stress top management

Throughout the four days of the
convention's business sessions, the
emphasis was on the importance of
good top management. AED presi-
dent H. J. Mayer set the tenor of the
meeting in his opening address when
he said, "Management has to assume
responsibilities if business is going to
be healthy."

In one presentation after another,
top management was blamed for the
"home-grown" problems currently

Ben Carbeau, executive vice presid
of American Pecco Corp., shows
model of a 401 Towercrane to visiting
son and father team, Karl and Walter
Bublitz, Kansas City, Mo., distributors,
as Lothar Conrad, American Pecco pres-
ident, looks on.

ED meeting

Manufacturers and distributors got together around an Early Birds breakfast table. Here are Jim Deephouse, Deephouse Equipment Co., Berlin, Conn.; B. H. Eddy, Eddy & Co., Lansing, Mich.; Lou Flora and Ray Ehn, Harnischfeger Corp., Milwaukee; Ken Rudd, Link-Belt Speeder Corp., Cedar Rapids, Iowa; and Larry Deephouse, Deephouse Equipment and father of Jim.

confronting the industry. But, far from stopping on this morose note, the program participants went on to reinforce the delegates with suggestions, ideas, and inspiration to help them fight the problems and build stronger business foundations for the future.

While the pressure was on management, the 2,800 individual delegates responded to the soothing influences of California's warm sunny days and mild nights; the general tone of the meeting was one of relaxation.

Some of the delegates had left their homes just in time to escape one of the worst winter storms. Many more who had planned to attend were unable to make it when the big blizzard crippled transportation throughout the eastern states.

Convention headquarters was located in the Statler Hilton Hotel, where many of the distributor members were housed. The business sessions, luncheons, and Early Birds' Breakfast were held in the Statler Hilton ballroom.

(*Continued on next page*)

Blonde cover girl, shapely Donna Lynn, 36-22-36, displayed charms and scale models of pile hammers at the Vulcan Iron Works suite.

Prime-Mover Concrete Vibrator

Designed on the proven rolling-weight principle that:

1. Produces high frequency powerful vibrations
2. Permits the shaft to run cool and slow
3. Provides one hand portability
4. Changes from small to large heads quickly
5. Requires fewer parts — less maintenance
6. Gasoline or electric power units

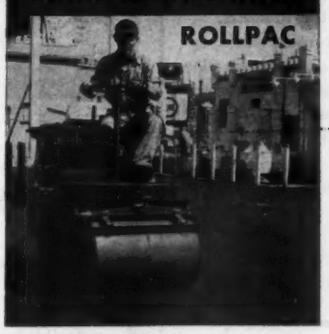
Guaranteed by Prime-Mover Co. — recognized for dependability in concrete handling equipment. Write to us for distributor's name and a demonstration. Prime-Mover Co., Muscatine, Iowa.

PRIME-MOVER

For more facts, use Request Card at page 18 and circle No. 396

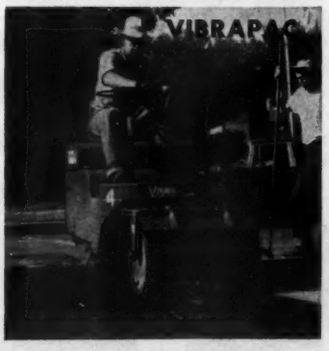
YOU CAN'T OUTGROW A ROLCOR ROLLER

STATIC OR VIBRATORY



Whether your job is . . . Crease rolling . . . Driveways . . . Parking lots . . . Patching . . . Tennis courts . . . Sod rolling . . . Maintenance . . . you won't outgrow the usefulness of a Rollpac.

That's why thousands of contractors, landscapers, institutions and others make Rollpac their "number one" unit. One week on *your* job will prove to you why Rollpac is the top selling one-ton roller in the United States.



Here's a two-ton vibratory roller that produces compaction to equal or exceed static rollers weighing eight tons! Vibrapac is 100% American designed and built specifically for asphalt and soil compaction—no corrugation of surfaces. A single lever clutch shifts from static to vibratory action. Works in close places.

Easy to transport with Rolcor Trailer.

WRITE FOR FULL INFORMATION AND LITERATURE

ROSCO MANUFACTURING CO.
ROLCOR DIVISION
3118 Snelling Ave. • Minneapolis 6, Minn.

For more facts, circle No. 395

Synclinal Sump Type
Capacities: 5—8—10—20—30—50—75 and 100 G.P.M.
Pipe Sizes: ¾"—1"—1¼"—1½"—2"—2½" and 3".
Connections: Coupling—Male Nipple.
By-pass Valve: Not Available.

Synclinal Line Type
Capacities: 5—8—10—20—30—50—75 and 100 G.P.M.
Pipe Sizes: ¾"—1"—1¼"—1½"—2"—2½" and 3".
By-pass Valve: Not available.
Operating Pressures: Up to 80 p.s.i.

Bonded Line Type
Capacities: 10—20—30—50 and 75 G.P.M.
Pipe Sizes: 1"—1¼"—1½"—2" and 2½".
By-pass Valve: Available with or without.
Operating Pressure: Up to 250 p.s.i.
Operating Temperatures: Up to 300° F.

MARVEL
SYNCLINAL FILTERS

For DEPENDABLE PROTECTION on all Hydraulic and other low pressure circulating systems

Designed to give more ACTIVE filtering area—MORE dependable protection—MORE productive operation before cleaning is necessary. *Meet J.I.C. Standards.*

FILTERING MEDIA in all Marvel Filters is Monel wire cloth available in mesh sizes of 30-40-50-60-80-100-150 and 200 to meet your degree of filtration requirement.

EASY TO CLEAN—All Marvel Filters are easy to clean. Line type units operate in any position and may be serviced without disturbing pipe connections.

OVER 900 O. E. M's. install Marvel Filters as Standard Equipment.

In-Line Filter
Capacities: Up to 60 G.P.M.
Pipe Sizes: ¾"—1"—1¼" and 1½" (at both inlet and outlet).
By-pass Valve: Available with or without.

Tandem Sump Type
Capacities: 10—16—20—40—60—100—150 and 200 G.P.M.
Pipe Sizes: ¾"—1"—1¼"—1½"—2"—2½" and 3".
Connections: Coupling—Male Nipple.
By-pass Valve: Not available.

Bonded Sump Type
Capacities: 10—20—30—50 and 75 G.P.M.
Pipe Sizes: 1"—1¼"—1½"—2" and 2½".
Connections: Coupling—"O" Ring—Male Nipple.
By-pass Valve: Available with or without.

IMMEDIATE DELIVERY

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For further information on a specific type filter—Write—wire or phone

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Please send me information on Marvel Filters as indicated: CE-3

☐ Hydraulic Oils ☐ Coolants ☐ Lubricants ☐ Fire Resistant Fluids
☐ Water ☐ Sump Type ☐ Line Type ☐ In-Line

Name_____
Company_____
Address_____
City_____ State_____

A.E.D. 1961 Executive Committee (left to right): P. D. Herman, executive secretary; vice president, W. H. Cornelius, The Cornelius Co., Albuquerque, N. Mex.; vice president, John R. Borchert, Borchert-Ingersoll, Inc., St. Paul, Minn.; president, R. F. Newlin, Newlin Machinery Corp., Kansas City, Kans.; senior vice president, Braxton Blalock, Jr., Blalock Machinery & Equipment Co., Inc., Atlanta, Ga.; vice president, George E. Bernard, Laurion Equipment, Ltd., Montreal, Que., Canada; treasurer, H. B. Benson, Road Builders Equipment Co., Memphis, Tenn.

Small CRAWLER-TRACTOR INCREASES PROFITS!

- Backfills
- Excavates.
- Grades
- Spreads.
- Drawbar 2000 Pounds.
- Size: 41" x 84".
- Lifts 7'3".

MEAD **SPEEDCAT**

(1) Operates in tight places where other equipment cannot be used!
(2) Delivers power and traction proportionate to larger crawlers!
(3) Can be operated or loaded on a pick-up truck or trailer by one man!

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MAKE UP YOUR OWN HERC-ALLOY SLINGS. No more waiting for new or repaired assemblies to reach you from the factory.

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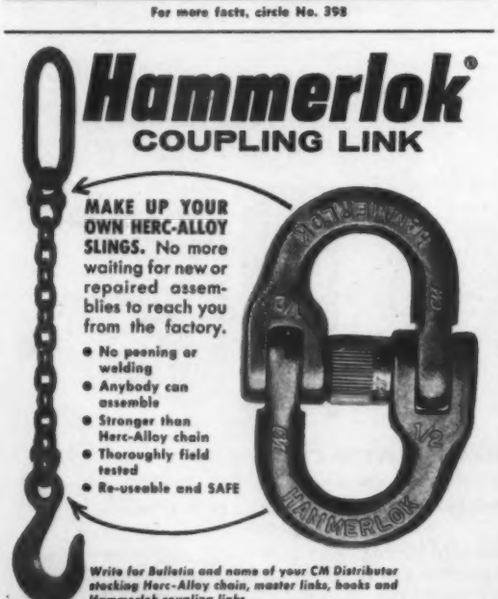

Write for Bulletin and name of your CM Distributor stocking Herc-Alloy chain, master links, hooks and Hammerlok coupling links.

RUGGED : DURABLE
CM CHAIN

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SAN FRANCISCO
In Canada: Columbus McKinnon Limited, St. Catharines, Ontario

For more facts, circle No. 399

(Continued from preceding page)

The association's conference, display, and exhibit center, commonly known as Condex, was set up in the Rex Room on the lower floor of the Biltmore Hotel. Manufacturers' conference suites were located on the first seven floors of the Biltmore.

Some 65 manufacturers maintained booths in Condex, displaying a wide variety of the smaller construction machines and demonstrating the larger items by means of models and other visual aids.

A free shuttle bus service between the two hotels was operated for the convenience of the delegates. However, in the pleasant weather, many chose to walk the five or six blocks.

Second look at the 60's

To set the scene for the sessions to follow, a panel of speakers at the first business session took "A Second Look at the 60's" through the eyes of a manufacturer, a financier, a contractor, an economist, and a distributor who served as moderator. Supplying these eyes were M. R. Yontz, president of LeTourneau-Westinghouse Co., Peoria, Ill.; R. S. Murphy, vice president of CIT Corp., New York, N. Y.; J. P. Cagle of A. Tiechert & Son, Inc., Baldwin Park, Calif.; T. A. Anderson, chairman of the School of Business of the University of California at Los Angeles; and P. E. Mac-

Girly-type entertainment is always well received at AED's Early Birds breakfast. The Gardner Sisters—Judy, Carol and Janey—clap hands, wiggle, and also sing for the conventioneers.

FOR THE COMPETITIVE SIXTIES:

FASTER COMPACTION CUTS OPERATING COSTS!

For compaction jobs requiring "high production", a *dependable* American Model ADC 120 Road Runner sets a fast 8 to 12 mph pace and can stay ahead of several scrapers.

The Road Runner's high compaction capacity gives a flexible balance of equipment to the job.

Other *top-value* sheepsfoot and pneumatic tire rollers are available . . . check with us or your distributor on models to meet your requirements.

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1211 West 27th St.
Kansas City 8, Mo.

For more facts, circle No. 400

MOBILE OFFICE Units are low in cost . . . Built to your specifications . . . There's a unit to fill your every need.

Because MOBILE OFFICE Units are easy to move from job to job, they enable you to have office, engineering, paymaster and other facilities at every point of your operation.

These units are economical, time saving, rugged and durable. They are self-containing, and are available with air-conditioning, and can be fitted to your specifications.

MOBILE OFFICES are being used by major contractors and other major businesses throughout the United States. In every case they have proven their worth.

Remember, whatever your needs may be, a MOBILE OFFICE Unit can be built to fill your requirements.

If it's Mobile . . . We Build It!

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Phones; DOrchester 3-1048-9
7314 Stony Island Avenue, Chicago 49, Illinois

For more facts, circle No. 401

At the opening business session of the convention, a panel discussed "A Second Look at the Soaring '60's." The experts are: economist T. A. Anderson, University of California at Los Angeles; distributor P. E. MacAllister, Indianapolis; contractor J. P. Cagle, Baldwin Park, Calif.; financier R. S. Murphy, New York City; and manufacturer M. R. Yontz, Peoria, Ill.

Allister, MacAllister Machinery Co., Indianapolis, Ind.

After this review of the 60's, the distributor members of AED met in a closed "Executive Session for Distributor Management" on Tuesday morning.

The feature of this program was an address by Rex Land, manager of the Los Angeles branch of McKinsey & Co., management consultants, in which he slapped management with some strong language.

Lack of clear-cut objectives, "lousy" organization, "abominable" personnel administration, and "loosegoose" operating practices were characterized by Land as some of the reasons for the problems facing dealers today.

Then he went on to explain how dealers could reorganize their operations to make best use of the talents of their personnel by eliminating the useless, wasteful, and unprofitable practices which he had so clearly pointed out to them.

A second speaker on the program, Dr. W. J. E. Crissy, professor of business administration at Michigan State University, analyzed the duties and responsibilities of sales managers in the many phases of the equipment-distribution business.

Typical dealer problems were dramatized in a series of skits presented at this session.

Condemns manufacturer retailing

Condemning the retailing of construction equipment by manufacturers, John E. Carroll, president of the American Hoist & Derrick Co., St.

(*Continued on next page*)

Tom Callahan, Jr., of Callahan Equipment Co., Kenilworth, N. J., shows interest at the Flygt Condex display of a Bibo 3-inch electric submersible pump in operation.

Adulterate!
Never!

Adulterate: To make impure by admixture of other or baser ingredients; corrupt.

Our Sta 'N Play gal and her roommates don't believe in it.

Sta-Crete ships an unadulterated Epoxy formulation to meet your job requirements—from a playground for Sherman tanks to a playground for Playboys.

Of course, we're partial to Architects, Engineers and Contractors who are all part-time Playboys.

Let's start dating now—
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Dealer Inquiries Invited.

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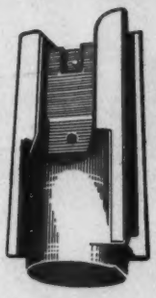
DEPENDABLE SEMI-STEEL PILE HAMMERS



PILE DRIVER HAMMERS

Well designed of tough close-grained semi-steel to give maximum impact for easy reeving. Can be adapted to fit present leads. Fast service in sizes 2000 lbs. to 4000 lbs. in 250 lb. increments.

FOLLOW BLOCKS

Sturdy semi-steel. Quick delivery on all sizes for hammers weighing 2000 lbs. to 4000 lbs.

SWINGING LEADS One Section All-Steel
Lengths 20' 25' 30' 35' 40'

Maintain your pile drivers at top efficiency with this low cost replacement equipment.

Buy Direct From Manufacturer and

Save!

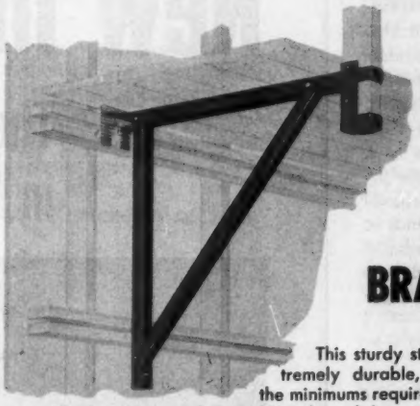
WRITE NOW . . .
for detailed literature and Low Factory Prices . . . also other Paving Contractor Equipment.

Sioux City Foundry & Boiler Co.

East 8th & Division SIOUX CITY 2, IOWA Phone 5-7967

For more facts, use Request Card at page 18 and circle No. 403

Eliminate Dangerous Makeshift Scaffold Supports!



with THIS NEW SCAFFOLD BRACKET (JACK)

This sturdy steel Scaffold Bracket is extremely durable, being far stronger than the minimums required by State Building Codes.

The bracket may be quickly adjusted for connecting to either 2 x 4 or 2 x 6 wales, or flush with the concrete face. (Illustration shows the 2 x 4 position.)

One of the many advantages is the *fold-down* feature which saves considerable space in storing and shipping. Why not stop using hazardous makeshift scaffold supports and specify Superior's Scaffold Bracket — made of steel — virtually indestructible. May be rented as well as purchased outright. *Write for Bulletin OF3.* **Superior Concrete Accessories, Inc., 9301 King St., Franklin Park, Illinois**

For more facts, use Request Card at page 18 and circle No. 404

OVERMAN
STONE AND ASPHALT SPREADER
A BIG-JOB PAVER AT A SMALL COST

You can do fast, high-quality paving with this small, compact, low cost machine. Lays any type, commercial asphalt. Easily handled on small jobs, highly efficient on the largest job. A proven money-maker for contractors and highway departments everywhere.

GET THE FACTS . . . WRITE FOR DESCRIPTIVE BULLETIN TODAY

I. J. OVERMAN MANUFACTURING CO.
BOX 896 MARION, INDIANA

For more facts, use Request Card at page 18 and circle No. 405

The sound of music from the accordion of pretty Suzi Chandler attracted distributor groups to the hospitality room of Associated Investment Co. where they picked up the latest word on financing.

In a skit after the opening breakfast, the act of Maza and West (ends) gets "music" out of a distributor quartet: Orville Brogdon, trumpet; O. E. Capehart, bagpipes; Ben Sellers, trombone; and Steve Panke, French horn.

(Continued from preceding page)

Paul, Minn., labeled the practice a "national disease and a creeping paralysis." In the major address of the Wednesday business session, entitled "Strong Survival, the Cornerstone of the 60's," Carroll urged AED to take drastic action against manufacturers who engage in direct selling.

The fight for survival, he indicated, encompasses the entire industry: the manufacturer, the distributors as a segment of the industry, and the individual distributor as an independent businessman. Based on trends of the past few years, Carroll predicted that distributor ranks would be thinned by casualties of up to 25 per cent in the coming five years.

Newlin elected president

The convention elected a slate of officers for 1961 headed by president Richard F. Newlin, Newlin Machinery Corp., Kansas City, Kans. Other officers are: senior vice president Braxton Blalock, Jr., Blalock Machinery & Equipment Co., Inc., Atlanta, Ga.;

INCREASED PROFITS with EFCO FORMS

- Save time, material, money.
- Steel faces assure lifetime service.
- Easy to handle and assemble.
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Please send catalog on EFCO Steel Forms, and address of nearest sales office (there are 30 coast to coast).

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Firm Name.....
Address.....
City.....State.....

For more facts, circle No. 406

New International® Trucks

The most-improved light-duty models in INTERNATIONAL history!

Leading the field is the new INTERNATIONAL model C-120(4x4), 7,000 lbs. GVW. This new all-wheel-drive is practically the same height as regular models, now has single stick shift for power dividing transfer case. Shown here with unique Travelette cab, room for 6 men plus 6-ft. pickup body.

vice president John R. Borchert, Borchert-Ingersoll, Inc., St. Paul, Minn.; Canadian vice president George E. Bernard, Laurion Equipment Ltd., Montreal, Que.; vice president William H. Cornelius, Cornelius Co., Albuquerque, N. Mex.; and treasurer H. B. Benson, Road Builders Equipment Co., Memphis, Tenn.

The new officers were installed at the Wednesday noon luncheon. They took office as of the end of the annual meeting.

On the social program was the annual Early Birds' Breakfast with decor and entertainment featuring a Viking motif in honor of retiring president Mayer. The President's Reception and the 42nd Annual Birthday Party and Show were held in the Biltmore Hotel on Tuesday evening.

Inspirational speakers at the programs included Dr. Tennyson Guyer, public-relations director of the Cooper Tire & Rubber Co., Findlay, Ohio, and Earl Nightingale, president of Nightingale, Conant Corp., Chicago, Ill. THE END

Peanuts were the gimmick at the Tubular Structures Corp. booth in Condex. Hospitable hostess Lorraine "Madcap" May offers a handful to distributor Tom Walker of G. W. Van Keppel Co., Kansas City, Mo.

New firm makes conveyor, classifying equipment

■ A new company, COMCO Corp., specializing in equipment for the classification and conveying of materials, has been formed with headquarters in Philadelphia, Pa.

Products manufactured by COMCO include a system of vibratory screens and conveyors said to transmit no vibration to their foundation, and a line of hydraulic classifiers and dewatering equipment.

The COMCO marketing area will include the entire Western Hemisphere. A national merchandising program is presently under way, and distributors are being appointed.

Underwriters' label for prestressed members

■ Underwriters' Laboratories will provide a 2-hour fire-resistance label for prestressed-concrete double-tee floor and roof members, based on the results of fire tests sponsored by the Prestressed Concrete Institute.

Minimum bottom cover and minimum side cover specified for UL label approval are 1⅝ inches and 1⅛ inches, respectively. These specifications cover virtually all prestressed double-tee and channel sections presently available in the United States and Canada.

Up to five strands per stem may be used in UL-labeled members. All commonly used strand sizes are permitted (¼ inch to ½ inch). Maximum width of members is established at 60 inches; the depth and length are unrestricted.

New PCA film

■ "Concrete in the '60's: Report No. 1," a 16-mm sound and color film highlighting outstanding construction projects, news events, and new applications of concrete during the past year, has been issued by the Portland Cement Association, Chicago.

Among the projects illustrated are: construction scenes of the Glen Canyon Dam on the Colorado River; an experimental prestressed-concrete transmission tower in Connecticut; test installations of prestressed-concrete railroad crossties; and unusual housing, agricultural, and recreational applications of concrete.

Prints of the film may be obtained on loan through any of PCA's 35 district offices located in major cities of the United States, including Honolulu, Hawaii, and in Vancouver, B. C.

Stone & Webster news

■ Stone & Webster Canada, Ltd., Toronto, Ont., a subsidiary of Stone & Webster, Inc., New York and Boston, has appointed Glenn H. Curtis vice president and general manager.

Curtis joined the Canadian subsidiary in 1955 and has served as vice president since 1959. He succeeds Leonard L. Youell, who will continue to serve on the board of directors.

7 times better to meet your truck needs

1. Overall height of new INTERNATIONAL models is up to 5 inches lower without sacrificing ground clearance or cab room.
2. Choice of new independent torsion-bar front suspension or I-beam front axle with leaf-type springs for more driver comfort and greater load protection.
3. New hydraulically-assisted clutches in all models ease shifting effort, and also reduce linkage and maintenance.
4. New rigid box section frames or sturdy channel frames take any punishment in stride.
5. Wheelbases are 5 inches longer to improve the ride and give better angle of approach and departure.
6. New contoured grille and restyled sheet metal with sloping hood give you a new look, king-size visibility.
7. Seven regular models with GVW ratings from 4,200 to 8,800 lbs. – plus the special new model C-100 – present a complete light-duty line-up.

Stop in today at your INTERNATIONAL Truck Dealer or Branch for the whole story. Drive and price the new INTERNATIONAL light-duty models.

Your most reliable worker can be a new INTERNATIONAL with standard pickup body. Sand-tight box with sturdy all-steel construction throughout. Ribbed floor lessens the friction when loading or unloading. Body lengths of 7 and 8½ feet. V-8 engine power is standard, "sixes" and more powerful V-8 optional. All-wheel-drive models available – let you go anywhere, anytime.

INTERNATIONAL® TRUCKS IH

RLD'S MOST COMPLETE LINE

International Harvester Company, Chicago • Motor Trucks • Crawler Tractors Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors

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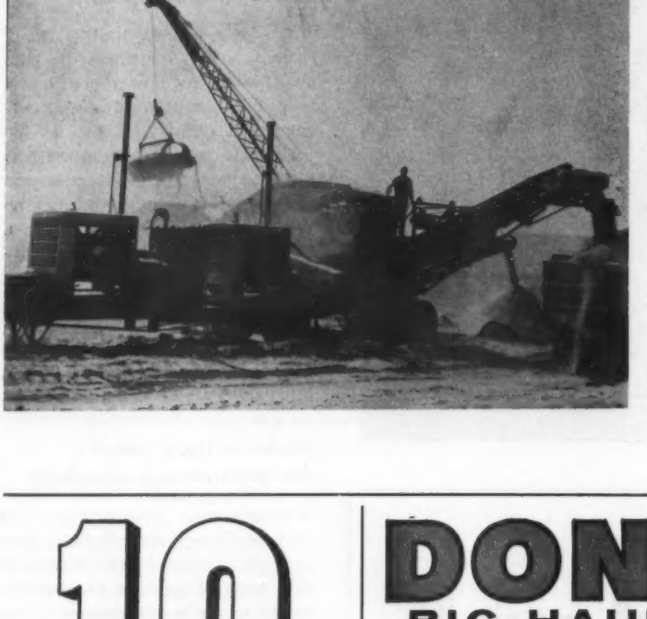
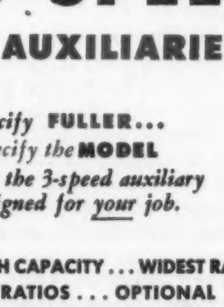


AT A 9,500-FOOT ELEVATION near Walden, Colo., this crusher, powered by two International UDT-817 turbocharged diesel engines, produces as high as 320 tons of rock per hour. The machine, operated by the C. L. Hubner Co., Denver, is supplying 125,000 tons of base material, surface stone, and hot-mix aggregate for repaving U. S. 40 and State Route 14. Boulders and gravel are obtained from a glacial deposit, and 40 per cent of the material requires crushing.

16 MODELS of FULLER 3-SPEED AUXILIARIES

Specify **FULLER...**
Specify the **MODEL**
Get the 3-speed auxiliary designed for your job.

HIGH CAPACITY... WIDEST RANGE OF RATIOS... OPTIONAL TOP-MOUNTED POWER TAKE-OFF... LOW INITIAL COST, LESS MAINTENANCE... AVAILABLE FROM ALL LEADING TRUCK MANUFACTURERS ON SPECIFICATION



Choose from 16 Models of FULLER Three-Speed Auxiliaries

FULLER TRANSMISSION DIVISION
EATON MANUFACTURING COMPANY
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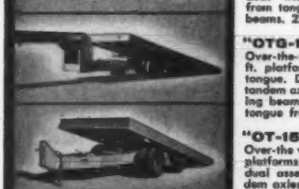
DON'T PAY BIG HAULING COSTS!



just drive on - drive off any rig from 4 to 22 tons *with built-to-last, low cost* MILLER *Tilt-Tops!*

"OTS-22"
8' x 4' stationary platform with 8' x 16', or 20' long tilt section available. Gooseneck tongue. Tandem dual wheels suspended directly from tongue frame on new spring beams. 22 ton capacity.

"OTS-15"
Over-the-wheels 8' x 16' 6", or 20 ft. platform available. Gooseneck tongue. Dual wheels mounted on tandem axles with oscillating walking beam suspended directly from tongue frame. 15 ton capacity.

"OT-15"
Over-the wheels, 8' x 16' 6", or 20' platforms available. Eight wheels, dual assemblies, mounted on tandem axles with oscillating walking beam. 15 ton capacity.

"BT-10" & "CT-7"
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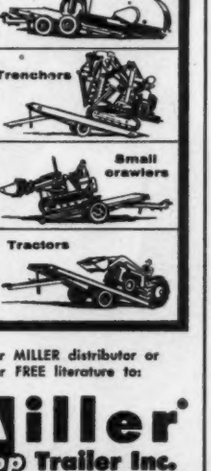

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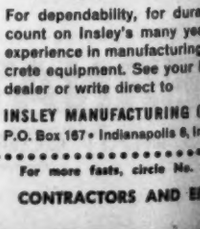

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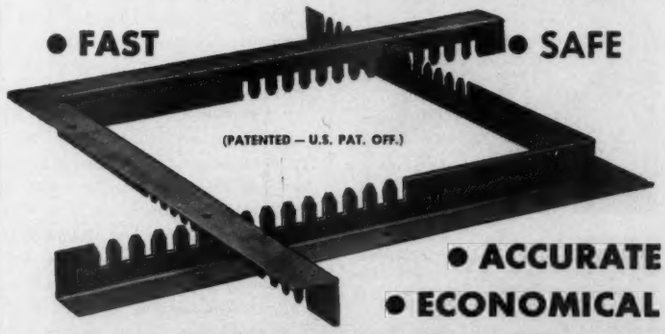

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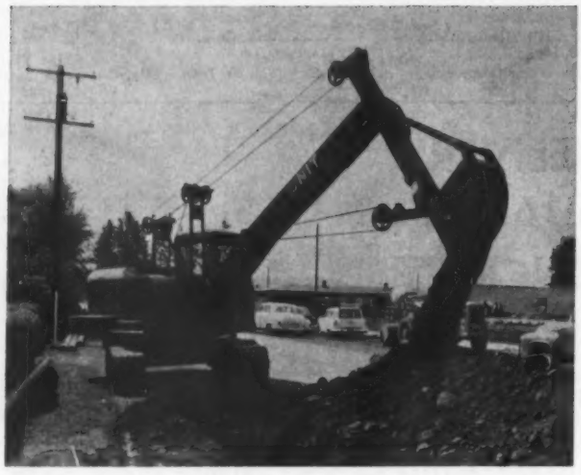

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Army Engineers study plastic-foam buildings

■ The U. S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va., is currently studying the concept of "buildings in barrels," which envisions the shipment of barrels of liquid plastic to the construction site where the chemicals would be mixed to form a rigid building material of plastic foam.

The plastic, at a density of approximately 60 pounds per cubic foot, can be mixed to form the foam at a density of approximately 2 pounds per cubic foot, thereby obtaining 30 cubic feet of material for each cubic foot shipped.

Cost of the material is $1.50 per cubic foot of 1.8 pound per cubic foot density foam, or approximately $1 per pound in the liquid form.

The laboratories have produced a panel-type experimental building, using the new technique. Each panel was foamed in place in molds somewhat similar to a metal casting. Although the structure can be reinforced in many ways, the most promising is to spray with polyester of epoxy fiberglass resin.

The building has been found to be lightweight, strong, and flexible, with such additional advantages as low thermal conductivity and low moisture absorption.

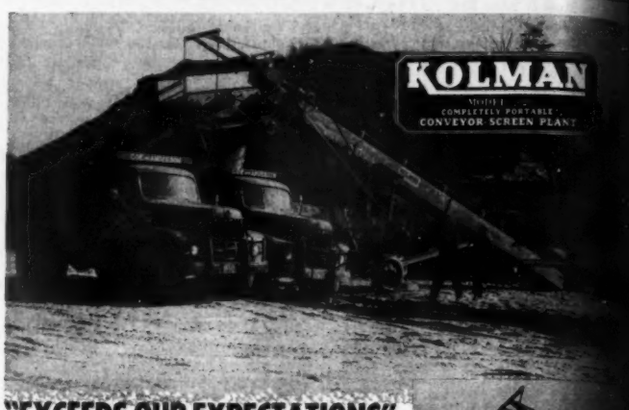
Maryland sets million for state road repairs

■ John B. Funk, chairman-director of the Maryland State Roads Commission, announced that the commission is earmarking $1 million in emergency funds for use in repairing and restoring state highways that have been damaged by the freeze-thaw cycles of the past winter.

The designated amount was based on earlier estimates of the extent of weather damage expected.

The money will come from the commission's emergency fund, which is drawn, as needed, from construction monies.

An arrangement is being worked out with Maryland highway contractors whereby extra men and equipment will be brought in immediately, when needed, to do repair work.



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